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The Hunterian Lecture

ON

INTERMITTENT HYDROPS OF THE JOINTS: AND THE INFLUENCE OF GROWTH ON DEFORMITIES.

Delivered at St. George's Hospital on May 25th, 1904,

BY HOWARD MARSH, M.A., F.R.C.S. ENG.,
PROFESSOR OF SURGERY IN THE UNIVERSITY OF CAMBRIDGE.

MR. CHAIRMAN AND GENTLEMEN,—When your Dean conveyed to me the wish of your council that I should deliver the Hunterian lecture this year he informed me that there were no conditions necessary to be observed and that the matter was entirely in my own hands. In these circumstances it devolved upon me to select some material which might be worthy of your attention. But, further, I had to remember that the name of Hunter would stand inscribed before me, so that I must, in however small a degree, yet as far as possible, show myself one of his disciples by endeavouring to contribute something to our knowledge in the field of surgery. There are two subjects which have lately attracted my attention and a discussion of which, I hope, you may find of sufficient interest to justify me in having chosen them. I have taken (*a*) intermittent hydrops of the joints; and (*b*) the influence of growth on deformities.

Intermittent hydrops of the joints is certainly a remarkable affection. By way of introduction I will read two examples of it which have come under my own personal notice.

CASE 1.—A man, aged 38 years, a patient of Dr. E. J. Tatham of Cheltenham, was kicked on the knee by a horse in December, 1902. Some effusion followed, but under treatment the joint soon apparently recovered. In April, 1903, while the patient was in Scotland the knee became so painful that he could get very little sleep. There was no marked swelling or other objective symptom. Pain shortly afterwards subsided, but when he was at Henley a few months later it returned and was so severe that hypodermic injections of morphine were used. Swelling was slight and there was no heat of the surface. As the condition was supposed to be due to rheumatism blisters were used but without benefit. Later, the joint was stiff and more swollen. It was put into a splint and he went about on crutches. Improvement slowly followed and in a month he could walk a little on the limb. In September he had hot-air baths and some massage, but the joint became extremely painful and so much swollen that it measured two inches in circumference more than the other knee. This swelling, however, soon subsided and when I first saw him early in October, 1903, he stated that three weeks before the joint was quite well, though the limb was weak and painful. On inspection the joint appeared natural. It was free from heat and there was then no swelling. Passive movements were perfectly free and smooth, but the muscles were considerably wasted and so powerless that when he was lying he could not raise his heel off the surface of the bed, and he carried a crooked stick to lift his foot when he was sitting and wished to change its position. He said that at night he had such agonising pain in the limb from the hip to the ankle that it was like being on the rack, and I entered in my notes that his complaints of pain in their apparent extravagance resembled those of a hysterical woman. As the case was one of unusual character he came to London for further observation. On the morning of the day after his arrival the sister of the surgical home reported that all through the night he had been in very severe pain and had scarcely slept at all. I found the knee only slightly swollen, free from heat, and as before readily allowing passive movement from very nearly full extension to almost complete flexion. He was himself unable to move it. He looked worried and depressed, complained bitterly of pain, and said that something must be done for his relief. He was even ready to submit to amputation. During our conversation he remarked that swelling became much more marked *every night* and he asked me to see him on that evening at six o'clock. On doing so I at once found that the knee had undergone a remarkable change since the morning, for it was now so considerably swollen that it was an inch and a half larger than its fellow and the swelling was such as I had never before met with. It followed exactly the outline of the synovial membrane, and within this area it was so abrupt and prominent that the knee had a remarkable globular appearance and the patella was pushed forwards in a very unusual manner. There was no fluid in the cavity of the joint and the swelling seemed to be due to mere vascular turgescence and engorgement of the synovial membrane, which appeared at least half an inch thick. The surface was a little over-warm and slightly dusky. He now repeated his statement that the joint swelled up in this way regularly every evening and then gradually reassumed a natural appearance. Hearing of this quite definite periodicity I was reminded of ague and I asked him if he had been abroad. I found that he had been, that he had often had malaria, and that he had taken large quantities of quinine, but none since the knee had been in its present state. In these circumstances I ordered him ten grains of quinine twice a day. On the next morning I was told that he had lost his pain and had slept all through the night and until 10 A.M. He looked like another man; he was fresh and bright, and said it was the first night of freedom from pain he had had for eight months. He continued the quinine. His pain did not recur and the attacks of swelling diminished, and in four days, as there seemed no reason for keeping him in town, he returned home to be under Dr. Tatham's care. He soon regained some power in the extensor muscles and could raise the limb by a voluntary effort. The joint remained about half an inch larger than the other. Three weeks later the patient wrote: "The knee is progressing very satisfactorily. I have no sign of puffing towards evening and am able to bend it almost as easily as the other. I went a three mile walk last week without inconvenience. I am still quite free from pain, except a little down my leg and in my ankle. I feel so strong on my knee that I think I could walk on the hills, but Dr. Tatham thinks I had better defer that pleasure for a little." Shortly after this Dr. Tatham wrote that "the patient is able to be about practically all day without bad results. The joint is only three-eighths of an inch larger than the other and even after exercise there is no increase of size. He has *no* pain. There is more tone in the thigh muscles and less wasting, although the thigh is still markedly smaller than the other." Three months later Dr. Tatham wrote: "There have been some fresh developments in the case since I last reported. The patient managed to get influenza about a month ago. Simultaneously the knee-joint increased somewhat in size but in itself was not painful. However, there was shooting and burning pain, coming on especially at night, above and in front of the internal malleolus, accompanied by distinct swelling, the skin itself being exceedingly hyper-sensitive. Also there was pain which started just behind the great trochanter and extended upwards to the posterior part of the iliac crest. These pains were described as intense. They gave way to five-grain doses of phenacetin. The knee remains three-eighths of an inch larger than the other. The pain in the region of the inner ankle is better, but not gone, and the patient has to lace that boot more loosely than the other. The swelling there has gone. The pain at the back of the hip has gone. He is able to walk six or eight miles without subsequent swelling of the knee. The thigh muscles are still very wasted." Writing a few days ago Dr. Tatham reports that the knee is as good as the other and muscular wasting is only very slight.

CASE 2.—A young woman, aged 23 years, who looked well and robust, was admitted into St. Bartholomew's Hospital in March, 1903, for advice about her right knee-joint. She stated that for the last 18 months the knee every 14 days became swollen and somewhat painful. These symptoms, with the most marked regularity or periodicity, lasted three days and then disappeared, leaving the joint in a perfectly normal condition. The attacks corresponded with the menstrual periods and with the mid-periods between them. The patient's statements were fully borne out by what was observed while she was in the hospital, where she remained six weeks. During this time two attacks showed exact periodicity; the third, however, was one day late, that is, it occurred not on the Saturday when it was due but on the Sunday. The attacks were exact repetitions of each other. The joint became stiff and uncomfortable and the seat of

effusion, so that the synovial cavity was uniformly and somewhat tensely distended. The joint was tender and the temperature of the skin over it was slightly raised. The patient was kept in bed, but the attacks still recurred as regularly as before, though they were rather less marked and of rather shorter duration. Some fluid was removed from the joint and examined. It was merely synovia diluted with serum. There was no blood and no micro-organisms were present. Quinine had no effect. Various forms of local treatment were tried but were useless. On leaving the hospital the patient went to Lowestoft and was treated with arsenical solution. The attacks gradually declined in severity and at length ceased and she returned to her employment in London. At present, after the lapse of eight months, there has been no return.

These two are the only examples of periodic swelling of joints that I have met with or, at all events, recognised. Yet many cases are to be found in surgical literature which present the same feature of attacks which are periodic in their occurrence and which generally consist of a considerable effusion into the cavity of the synovial membrane; but sometimes, as in Case 1, of swelling not dependent on effusion but on turgescence of the synovial membrane sometimes combined with œdema of the neighbouring structures; while between the attacks the joints are in a normal condition or only weak. In the *Boston Medical and Surgical Journal* for 1901, vol. cxlv., p. 484, Dr. Brackett and Dr. Cotton have collected all the cases they have been able to find and have discussed them in a valuable and very instructive paper under the title of "Intermittent Hydrops." They found in all 68 cases but some of these were doubtful. When the doubtful examples were excluded there remained 43 clear instances, which, though differing in detail as to the particular joints or the number of joints involved, the period of return, and collateral symptoms—pain, heat, &c.—yet showed the distinctive feature of periodic attacks alternating with clear intervals. Many of the following particulars in regard to this group of cases are taken from the paper of Dr. Brackett and Dr. Cotton.

As to the local condition, this usually consists of an effusion into the cavity of the joint concerned. This may be small in amount but in some cases the cavity is tensely distended so that there is considerable pain. The fluid removed from the knee-joint in one of my cases was sterile and apparently merely diluted synovia. In a few instances, as in my first case, while there has been little or no effusion into the joint concerned, the synovial membrane has been swollen and the surrounding tissues have been œdematous. No case of suppuration or the formation of adhesions suggesting any inflammatory changes has, so far as I know, been recorded. In my first case there was a patch of œdema of the skin in the lower part of the leg.

The joint most frequently involved is the knee. Often both knees are affected and are the only joints attacked. But all the large joints—the hip, the ankle, the shoulder, the elbow, and the wrist, and even, Dr. Brackett and Dr. Cotton state, the lower jaw-joint and the joints of the spine—may be concerned. The condition may be limited for some years to one particular joint, or several joints may be attacked simultaneously or alternately, or many joints may be attacked in succession. The attacks reach their height in the majority of cases in two days and then subside in two days, so that they extend in all over four days. Yet the attacks may be much shorter. In my first case swelling began at about 4 P.M. and passed off again by about 6 A.M., thus lasting in all about 14 or 15 hours. The time of recurrence of the attacks varies widely in different cases. In Case 1 the attacks recurred every evening. In some an attack takes place every third or fourth day; in some only once every month. In Pletzer's and Seeligmüller's cases there was an interval of three months. The period of recurrence most commonly observed is between the ninth and the fifteenth day. In some cases the period changes. In one it changed from the thirtieth to the ninth day. In another from three months to 11 days. The affection is slightly more common in the female sex. As to age, although a doubtful case has been reported in a girl aged nine years, only three cases began as early as the fifteenth year. One patient was 54 years old. The affection most commonly begins about the twenty-sixth year. Although in some instances the attacks have corresponded with the menstrual periods in many others there has been no such coincidence. In reference to this point it seems interesting to recall the circumstance that the late Dr. W. M. Ord recorded some cases in which patients had somewhat painful swellings of the joints at each menstrual period. I have for many years watched for similar cases but I have never met with them. May it not be that Dr. Ord's cases were examples of intermittent hydrops the recurrence of which and of the menstrual periods were the same?

Although it will involve some repetition I shall now venture on a few additional remarks on my first case because, while its accurate periodicity stamped it as belonging to the group under discussion, the character of the swelling of the knee differed from that which is usually observed and also because the case presented several features beyond the condition of the joint which, although absent in many instances, must yet be borne in mind as parts of the general picture. Unless they are remembered the more rare forms of the affection are apt to be overlooked. The enlargement of the knee was not due to effusion into the joint; no fluid was present. It was the result of engorgement of the synovial membrane while a similar disturbance of the circulation in the subcutaneous tissue of the lower part of the leg, adjacent to but not involving the ankle-joint, was observed by Dr. Tatham. Not having met with these periodic joint cases before and as the patient in Case 1 had often had severe malaria I at first supposed that his case was an instance of malaria involving a joint, and this impression seemed to gain ground when quinine was found to produce so immediate and powerful an effect. There were two further points which turned my thoughts to malaria.

First, many years ago I read of the following remarkable cases. I can mention only the main facts, for I have no recollection as to where they were recorded and I regret that I have not been able to find them. In a malarial district two soldiers underwent amputation through the thigh. In both for several days the stump each day became dusky, painful, and engorged and then dripped blood freely. The patients became so exsanguine and exhausted that their lives were in great danger. Then, because they were so prostrated and were known to be the subjects of malaria they were treated with full doses of quinine. The result in both cases was immediate. The vascular disturbance of the stump ceased, hæmorrhage was arrested, and both patients recovered. The local disturbance of the circulation which occurred in these instances is perhaps similar to that in some cases referred to by Dr. Hilton Fagge[1] in which patients suffering from malaria have been attacked with coma. "Hertz says"—I am quoting from Fagge—"that instances of this are from time to time sent into the hospital under his care for apoplexy and Graves placed on record a case in which he made this mistake. A gentleman awoke about 4 A.M. with sensations of malaise, chilliness, nausea, and headache. After an hour he became extremely hot, the pain in the head was intense, and he passed from a drowsy condition into one of complete coma with deep snoring, so that he appeared to be labouring under a severe apoplectic fit. He seemed to derive much advantage from bleeding and other remedies and in the evening he was perfectly well. The day but one after the same symptoms returned and were removed by the same treatment, but when a third attack came on Graves saw that it was an example of *tertiana soporosa* and cut it short by large doses of quinine."

Secondly, the presence in my case of severe neuralgia could, I thought, reasonably be regarded as suggestive of malaria, for in cases of what has been termed masked ague the paroxysms may be, as Fagge states, "of the most diverse description and attended with scarcely any febrile disturbance, or even with none at all. The most important of these paroxysms is neuralgia, occurring especially in the region supplied by the first division of the fifth nerve, and thus often called brow ague, ... while cases of sciatica and other neuralgic affections of the limbs have been attributed to ague." In my case pain was intense. Nor was it confined to the knee or primarily dependent on the joint affection. At one time it involved the lower part of the leg, where it was associated with swelling of the skin and subcutaneous tissue—a distinct local vascular disturbance—and with hyperæsthesia of the surface. At another time it extended from the iliac crest to the great trochanter. Thus the pain (in Case 1) was similar to that which has often been met with in malaria. I found, however, when I consulted Sir Patrick Manson that he knew nothing of any affection of

[1] Principles and Practice of Medicine, edited by Dr. P. H. Pye-Smith, 1886, vol. i., p. 343.

FIG 1

A rickety femur showing a strong buttress of compact bone in the concavity of the curve.

FIG. 2.

Photographed from specimen in the Museum of St. Bartholomew's Hospital. Left femur of a child, aged seven years, in whom Macewen's operation for genu valgum had been performed three years previously. A slight heaping up of cancellous tissue at the point marked × indicates the site of operation.

FIG. 3.

Skiagram from a case of osteotomy for genu valgum performed three and a half years previously. The femur shows no trace of bony thickening at site of operation. The boy was aged eight years.

FIG. 4.

Skiagram of the femur of a boy, aged six years, in whom a fracture of the middle of the shaft occurred when he was two years old. No trace whatever of injury remains.

the joints dependent on malaria, and I learnt from Major Ronald Ross that an examination of the patient's blood was entirely negative. Major Ross agreed with Sir Patrick Manson on the point that nothing was known of any joint affection due to malaria.

With the opinion of these two unimpeachable authorities before me the view that the case was one of malaria was clearly untenable. Moreover, the view that severe neuralgia in combination with periodicity necessarily pointed to malaria was, I afterwards found, erroneous, for severe neuralgia is often a prominent feature in cases of intermittent hydrops. Indeed, some patients have complained of periodic neuralgic pains long before the joint affection was observed, while Brackett and Cotton remark that "in some cases severe arthralgia seems to be definitely the equivalent of the effusion. In Dentu's case there was at first intermittent knee hydrops which ceased and then later severe pain and disability (without swelling) attacked the hips and knees at regular intervals. Still later the periodic swelling of the knees reappeared. Benda's patient had periodic pains in various joints at regular monthly intervals for years before the effusion in the joints began its periodic appearance." This alternation of the joint affection with periodic pains or the substitution of the latter for the former is certainly a very striking phenomenon and one which forcibly illustrates the obscurity of the pathology of this group of cases. The fact that the patient in Case 1 had suffered severely from malaria may possibly have had some bearing on the rapidity and completeness which characterised the effect of quinine. Quinine is a strong antiperiodic in many conditions but it may be so especially in those cases in which a malarial element is present. It is worth while to notice that in Case 1, as in some others which have been recorded, the periodic joint attacks first appeared after a local injury.

After I had written the above account my attention was directed to a paper in the Transactions of the Royal Medical and Chirurgical Society[2] by Charles Moore, a former surgeon to the Middlesex Hospital. Moore records that he met with two cases of periodic effusion into the knee-joint. Both patients were females, the one aged 43 and the other 21 years. In the first the attacks occurred for 18 years regularly once a month. They then changed their period to every ninth day and that with such regularity that the patient could foretell their return almost "to an hour." As in the generality of instances recorded by other observers, the attack in Moore's cases lasted in all about four days and in the intervals the condition of the joints was practically normal. In his second case the attacks recurred every twelfth day. Having related these cases as examples of periodicity Moore goes on to allude to instances in which the same characteristic had been observed in other regions than the joints and he refers to three remarkable cases of periodic sickness recorded by Joseph Adams.[3] In Adams's first case a young man had been for several years troubled with sickness, which occurred once in ten days, which lasted several hours, and was of a violent description. In his second case a "married lady of consideration had been for 14 years troubled with a sickness which returned precisely on the same day of the week. The nausea was so painful that she was under the necessity for the whole day of taking warm water. ..... In the course of the day she frequently swallowed and returned from five to six gallons of water." In his third case a woman "had been 18 years affected with a weekly periodical sickness attended ..... with a frequent headache not only on the day of her paroxysm but at other uncertain periods." In two of these cases the sickness was cured by the administration of arsenic.

As to the pathology of this group of cases nothing definite, so far as I am aware, is at present known. Until under this head something definite is ascertained we can only proceed in the matter of treatment on such general lines as seem to be indicated by our knowledge of the effects of drugs on symptoms, and by such experience as has been derived from cases that have already been observed. There are two drugs which might naturally be expected to be of service—the two most powerful antiperiodics we possess—quinine and arsenic. And this anticipation of their value has been fully justified by experience. True, both have failed. But both have many times succeeded. The effect of quinine in my first case was immediate and striking in the highest degree. In some other cases it was successful. In my first case and in some others the patients had previously had malaria. Whether this antecedent condition had any influence in promoting the action of quinine I am unable to say. Arsenic is the drug which has been most often useful. In my second case, while quinine had no effect, arsenic, though only when it had been continued for several months, seems to have stopped the attacks. I believe that there need be no question of its value in many cases, yet it should be remembered that the affection may disappear spontaneously for long periods, so that an apparently successful drug may have had really no part in the improvement observed. As matters at present stand the best course will probably be to give quinine as the first step and if it fails to prescribe arsenic, and if improvement is delayed to continue it, with due caution, for several weeks or even longer.

It may be shortly said of local treatment that none has seemed to be of any definite service. During the attacks the joints must perforce be kept at rest as the patient is unable to use them, but rest seems to have no effect in preventing or materially modifying the attacks. The same must be said of elastic compression and of other local methods.

I now turn to a subject which I regard as one of great importance in the surgery of infancy and childhood—the influence of growth upon deformity. In 1898, in the Cavendish lecture at the West London Medico-Chirurgical Society, I spoke of the influence of growth in (*a*) the production and (*b*) the removal of deformity. Since the lecture was given I have had further opportunities of observing the very material part which growth plays in the directions I have mentioned, and observation has also led me to believe that the matter is one which has not yet attracted all the attention it deserves. I have therefore determined to bring it prominently forward this evening.

The influence of growth is, I think, more often recognised as an agent in the production than in the removal of deformity. For example, the deformity produced as growth goes on in the tarsal bones in cases of talipes and in the vertebræ in cases of scoliosis is well known and constantly taught But the corrective agency of growth attracts less attention. Everyone knows that a child's bowed legs may grow straight. But the subject is not followed up in other directions. Yet the action of growth in removing deformity is, from a clinical point of view, more important than it is in producing it. For in dealing with growth as an agent tending to produce deformity the surgeon is called upon merely to counteract a mischievous tendency; while in growth, as an agent in the removal of deformity, he has at his disposal a force which is capable of yielding results which cannot be secured in any other way. And the work performed is of the highest order. It is the use of a natural process as a corrective agent. Now, when growth is regarded in this light it is seen to stand in strong contrast, and in a position of obvious superiority, to many of the purely mechanical methods which are in use in orthopædic surgery. Moreover, some results which are attributed entirely to the use of these mechanical expedients are beyond doubt, as a matter of fact, largely due to the corrective force of growth.

It will readily be conceded that growth takes place in conformity to type; that, in other words, it is modelled upon, and governed by, a pre-ordained plan. This regulating influence of conformity to type is, under natural conditions, ceaselessly and strongly at work to produce perfect form and symmetry. In many instances, however, the conditions under which growth is taking place are abnormal For instance, the bones of the lower extremity in a rickety child are deficient in rigidity and are easily bent. In these circumstances the influence of conformity to type which should maintain the normal outlines of the bones is opposed by the effect of the weight of the body in producing abnormal curves. And then it becomes not only interesting but important to observe what takes place. Growth, of course, will continue. But the question arises, By which of the two influences at work will it be governed: by the disturbing influence—that is, the tendency of the bones, due to their unnatural softness, to bend—or by the normal influence of type by which the proper form of the bones should be evolved? Now while the bones remain soft and the child is allowed to be constantly on his feet the abnormal influence will have the upper hand, and the

[2] Two Cases of Periodical Inflammation of the Right Knee-joint with Remarks vol. i., p. 21, 1807.

[3] Account of Three Cases of Extraordinary Periodical Sickness, two of which were Cured by Arsenic, Transactions of the Medical Society of London, vol. i., Part 2, p. 88, 1815.

directing influence of type will be superseded. In these circumstances the effect of growth will be to increase deformity, the bent bones grow more bent still, and the child will become more and more bow-legged. After a time, however, the rickety condition becomes less intense and the bones become more firm. When this point is reached the influence of type on growth begins again to assert itself. But the form it takes will vary with the case. If the bones—e.g., the tibiæ—are much curved and the child is allowed to be much on his feet the curve will be maintained, but growth will be turned in the direction of preventing further deviation from the normal—in preventing further curvature. This is the best that can be done in the conditions present when a bone already considerably curved has still to support the superincumbent weight of the body. What takes place is the growth of hard and compact bone in the concavity of the curve in the form of a powerful buttress (Fig. 1). Thus further curvature is prevented. And the work is done so effectually that these rickety bones are very much stronger than in their natural state. It will, however, be observed that although this result is, as I have mentioned, the best that can be attained in the circumstances that are present, it is not ideally perfect, for while the buttress prevents further bending it also acts as a tie-beam and so tends to render the curve permanent. This is seen in those instances in which the child grows up to manhood with bent limbs. Should the circumstances be completely favourable, however—that is, should the child be kept completely or for the most part off his feet so that there is no force at work to prevent the influence of type from exerting its full effect in regulating growth—it will be found that the bones, as growth proceeds, return, as one may say spontaneously, to their normal shape. Of this I may briefly mention some clear illustrations.

CASE 1.—In 1874 a child, aged seven years, had extreme rickety deformity of both the tibiæ and femora. To straighten the tibiæ wedge-shaped pieces of bone were removed at an interval of some months, first from the one and then from the other. Both wounds—for these were septic days—suppurated, some fragments of bone exfoliated, and healing was delayed. Thus the treatment of the tibiæ extended over about a year and the child was for the greater portion of the time off his feet. At the expiration of this period attention was turned to the femora. On examining these bones it was found that the considerable curvature which had been present had almost entirely disappeared so that the necessity for osteotomy or any other treatment was completely obviated.

CASE 2.—A child, three years of age, presented rickety deformity in a very aggravated degree of both the upper and the lower limbs, all the bones of which were so much curved that a single or perhaps a double osteotomy of each would have failed to put them straight. As an alternative the patient was sent into the country, properly fed, and kept entirely off his feet for 18 months. As the months passed it became obvious that the deformity of the limbs was steadily diminishing, and at the end of the time every bone had regained its normal or typical shape. When I last saw this patient he was 21 years old, five feet six inches in height, and quite free from any trace of deformity.

CASE 3.—A rickety infant, aged 13 months, a patient under the care of Dr. N. McCaskie, of Brompton, had lateral curvature of the spine with very marked rotation. The child's muscles were so weak that when he was placed in a sitting position the curvature was considerably increased. The deformity, which had been noticed for three months, was rapidly getting worse. It was evident that if matters were allowed to go on in the course of a year or two, or even a few months the deformity would become formidable, for the bodies of the vertebræ were abnormally soft and by being compressed in the concavity of the curves would soon become wedge-shaped and otherwise distorted. The patient was therefore kept for nine months almost constantly in the horizontal position in a small wicker-work tray in which he could be carried about and gentle massage for the trunk and limb muscles was employed. During this period the child remained in very good health and grew quickly and at the end of the time the deformity, which had become less and less marked, had almost completely disappeared.

But even deformed joints will grow straight.

CASE 4.—In a case of chronic tuberculous disease of the knee in a boy, aged five years, the usual deformity, compounded of flexion, displacement of the bones of the leg outwards and backwards, and rotation of the leg outwards, was definitely marked. It might even have been spoken of as considerable. For treatment the knee was encased in leather splints and kept at rest for 15 months. As time went on it was evident that the shape of the limb was being steadily corrected and the splints were on three occasions exchanged for a fresh pair made to fit the joint in its improved position. At the end of this period the limb admitted of full extension and all trace of displacement backwards and of external rotation had disappeared. Five years later the knee was freely moveable and its outline was quite normal and the boy was making full use of the limb.

CASE 5.—In a child, two years of age, the knee, as the result of active tuberculous disease, became deformed by a very marked degree of flexion and external rotation. The joint was treated with splints in the manner described in the last case and in 11 months all deformity had been corrected and the joint was freely moveable. I have seen many similar cases.

This disappearance of deformity under the influence of growth in childhood may frequently be observed in the case of fractures. In fractures of the clavicle union in the great majority of instances is attended with deformity which at first is often considerable. Yet in the course of six months, as I have several times witnessed, this deformity completely disappears. Formerly I was in the habit, in cases of green-stick fracture of the femur or the bones of the forearm united with deformity, of forcibly straightening the bones. But after a time I discontinued the practice, because in two cases of marked deformity in which the parents declined to allow me to perform the operation I found that the bend completely disappeared within six months. But probably the clearest and most conclusive evidence of the influence of growth in the removal of deformity is found in the results which follow osteotomy for knock-knee.

Some years ago I performed Macewen's osteotomy of both femora for genu valgum in a child four years old. The child died three years later from measles and this is one of the thigh bones (Fig. 2). Looked at in front it is of normal shape and bears no trace whatever of the deformity which was produced at the time of the osteotomy. Its longitudinal section, however, shows at the situation indicated by a small cross a little heaping up of cancellous tissue and this no doubt marks the point at which the bone was divided. This point, it is interesting to observe, is situated one and a half inches above the proper level for an osteotomy for knock-knee, a circumstance readily explained by the growth which took place in the lower end of the shaft between the operation and the death of the patient three years afterwards. The antero-posterior curvature has been maintained by the presence of a strong buttress which has grown up in the concavity of the shaft similar to that shown in Fig. 1.

I am much indebted to Dr. Hugh Walsham and Mr. G. E. Gask, surgical registrar at St. Bartholomew's Hospital, for skiagrams of several other cases in which osteotomy had been performed, two years or more before, for knock-knee. In two or three the seat of the operation is indicated by a slight bend or by slight bony thickening. In the great majority, however, there is no trace whatever of the angular deformity which was introduced into the shaft by the operation. (See Fig. 3.) The same disappearance of deformity is observed in accidental fracture of the long bones in childhood. Fig. 4 shows the femur of a child, aged six years, which had been fractured four years previously No trace of the injury remains. I think that when the evidence afforded by the cases which have been related and the skiagrams which have been shown is fully appreciated, it will be seen that the action of growth in the removal of deformities may often be turned to valuable account in the surgery of childhood.

WEST LONDON HOSPITAL.—Professor Mikulicz of Breslau will be the guest of the evening at the West London Hospital dinner to be held, as we have already announced, on Saturday, June 25th, at the Trocadéro Restaurant. Members of the medical profession who are not connected with the West London Hospital but who wish to meet Professor Mikulicz will be welcome at the dinner. Full particulars and tickets may be obtained from Mr. L. A. Bidwell, 15, Upper Wimpole-street, London, W.

The Lumleian Lectures

ON

SOME DISORDERS OF THE SPLEEN.

Delivered before the Royal College of Physicians of London on March 17th, 22nd, and 24th,

BY FREDERICK TAYLOR, M.D.,
F.R.C.P. LOND.,
SENIOR PHYSICIAN TO, AND LECTURER ON MEDICINE AT, GUY'S HOSPITAL.

LECTURE II.[1]

Delivered on March 22nd.

MR. PRESIDENT AND GENTLEMEN,—At the last lecture I was recording some cases of enlarged spleen in which the diagnosis had presented difficulties and I concluded with the remark that the recognition of the cause of enlargement depends less on the characters of the organ itself than on the associated conditions—except in respect of its size. I propose now to say something of the condition known as splenic anæmia, but before doing so must refer again to those cases in which a splenic enlargement may exist with comparatively good health and without an entirely satisfactory explanation of its occurrence.

CASE 14.—The patient was a woman whose age was unrecorded. She had had pleuritic effusion, was tapped, and then became anæmic. Her periods were irregular and scanty. She had had influenza six months previously. A hæmic murmur could be heard at the base. The liver could not be felt. The spleen was two inches below the ribs. On a blood count being made the red corpuscles were 40 per cent. and the hæmoglobin was 20 per cent. Two weeks later the red corpuscles were 39 per cent., the hæmoglobin was from 15 to 20 per cent., and the leucocytes were 7000 per cubic millimetre. She was treated as a case of chlorosis. Nine days later the red corpuscles were 53 per cent., the hæmoglobin was 40 per cent., and the leucocytes numbered 7700 per cubic millimetre. 13 days later the red corpuscles were 80 per cent., the hæmoglobin was 50 per cent., and the leucocytes were 6000 per cubic millimetre. A week after this she went out looking very much better. This was apparently a case of chlorosis, but the enlargement of the spleen, which after all was slight, is unexplained. It is an interesting fact that the spleen is not commonly enlarged in chlorosis. Now, four years later we understand that she recovered sufficiently to become a hospital nurse, but her present condition is unknown.

CASE 15.—A patient, aged 33 years, was seen by me in 1900. He had had influenza 15 months previously and another attack recently. Ten days previously there were sleeplessness, cough, anorexia, and a slight rise of temperature. Great enlargement of the liver was present. The spleen was within three inches of the middle line and three inches below the horizontal level of the umbilicus. A blood film showed normal red corpuscles and no excess of leucocytes. Two months later he was better and had been at work for three weeks. He thought himself quite well. The spleen was larger than it previously was. The red corpuscles numbered 5,000,000 per cubic millimetre and the hæmoglobin was 90 per cent. A leucocyte count was doubtful, but a film showed absolutely no excess, mainly small uninuclears with a few polymorphonuclears; no myelocytes were present. Recently after an interval of three years the patient was in almost exactly the same condition. He was at work, called himself well, but was probably not really vigorous. The liver reached four and a half inches below the ribs. The spleen was only two inches from the middle line and five inches below the level of the umbilicus; vertically it extended fully ten inches. It felt rough on the surface; it was not very firm or hard and gave the impression that it could be bent transversely; it was painless and not tender. The red corpuscles numbered 4,600,000 and the leucocytes 8000 per cubic millimetre; the hæmoglobin was 85 per cent. The heart and the urine were normal. This is a difficult case to classify. The patient was born in London and had never had ague. He had not any valvular disease or cirrhosis, and though his liver is enlarged it is distinctly not hard and it is clinically quite unlike a cirrhotic liver. He had not pernicious anæmia or Hodgkin's disease, and there is no pigmentation or hæmorrhage. Is it possible that this will ultimately develop into splenic anæmia, that he will lose more and more hæmoglobin and corpuscles?

SPLENIC ANÆMIA.

We may take as our guide the criteria last formulated by Dr. H. D. Rolleston—viz., (1) splenic enlargement; (2) no enlargement of glands; (3) anæmia of chlorotic type; (4) leucopenia; (5) a long course; and (6) tendency to hæmorrhage, especially of the gastro-intestinal tract; to which Professor W. Osler would add, (7) pigmentation of the skin; and (8) secondary enlargement of the liver. As I said in my last lecture, the criteria of splenic anæmia have varied somewhat. I may here record some cases which may claim to be regarded as instances of this disease.

CASE 16.—A medical man, aged about 50 years, came under my notice in March, 1894. He had been ill since the preceding November, when he was taken with dizziness and pyrexia, but though his more serious troubles began at this time he was conscious of something wrong with the left hypochondrium as long as two years before that (1891). He had been taking arsenic for some weeks and had noticed the following changes in his condition: (1) darkening of the skin and a curiously hyperæsthetic condition, so that a slight knock would be felt as pain; (2) the eyes were irritable; (3) the legs were weaker; and (4) he thought that the spleen was smaller. He was a medium-sized, thin-faced man, the face apparently tanned by exposure, but at the same time obviously anæmic, as were the lips and the mucous membranes. The hands were thin, tanned, almost emaciated, anæmic at the nails, and the ends were not obviously thickened. In the palms a whitening of the natural furrows, with perhaps a little redness of the intervening skin, was present. The forearms were not very dark, nor were the upper arms; the trunk was covered with an unusually thick and dark crop of tinea versicolor so that the actual colour of the skin could not be seen through it. The heart was normal in position and sounds. The chest was flat, resonant, with normal expansion; here and there a fine râle could be heard, but there was no other suggestion of tubercle. The abdomen was full, tumid, especially on the left side, and the spleen and the liver were obviously enlarged. The liver reached to within half an inch of the horizontal umbilicus level in expiration and descended to one inch below it in inspiration. It was firm but not hard; it had a smooth surface and a normally sharp edge. The spleen occupied the left flank and bulged the left anterior abdominal wall. During expiration it reached to half an inch below the umbilicus level and descended one and a half inches during inspiration. In the position of expiration the anterior edge was two and a quarter inches from the centre of the umbilicus; the lowest point was then two inches from the anterior superior spine and three and three-quarters from the costal margin vertically. The organs were not tender on pressure. A few posterior cervical glands could be felt but there were none in the axilla or groin. The urine was high coloured and deposited urates at once; there was no albumin; nitric acid produced a dark brown colouration. The feet were not swollen but the patient said that they became so sometimes. The inner border of the right tibia was thickened as if from periostitis. The blood from the finger showed no excess of leucocytes but a few tailed poikilocytes. The optic discs were rather hazy and pale; the edge was not well defined but was not blurred. Some veins were rather tortuous; there were no hæmorrhages. Two or three weeks later, on March 19th, he came into the private ward in Guy's Hospital. His weight was 9 stones 13 pounds. On the 21st his blood was found to have 3,000,000 red corpuscles per cubic millimetre and the hæmoglobin was 30 per cent. On the 29th the red corpuscles numbered 3,000,000 per cubic millimetre and the hæmoglobin was 35 per cent. On April 6th the red corpuscles numbered 4,250,000 and the hæmoglobin was 45 per cent. On the 13th he was certainly much better, less anæmic, fuller in the face, and had a good appetite. The red corpuscles numbered 3,800,000 per cubic millimetre and the hæmoglobin was 40 per cent. The spleen was only down to the level of the umbilicus on expiration, that is half an inch less in vertical movement

[1] Lecture I. was published in THE LANCET of May 28th, 1904, p. 1477.

than before. He had in the hospital oxygen inhalations and internally liquor arsenicalis and potassium iodide. He left shortly after—namely, on April 30th. On July 23rd I heard from him that he was much better. He had not been weighed. His colour was vastly improved. His feet and ankles were never œdematous. He was still taking arsenic. On May 20th, 1897, he wrote to me that his appetite was fairly good; that he could walk several miles, provided he walked slowly; that the spleen was not less in size, but certainly not much, if at all, larger; and that he was not taking any medicine. He died in 1903. The duration of his illness was therefore at least 12 years.

Of some cases recorded at the hospital we have the following.

CASE 17.—This was a very doubtful case and the clinical history is not forthcoming. There was a large, much infarcted spleen, weighing 91 ounces. There were subarachnoid hæmorrhages over the cerebellum, hæmorrhages of the right frontal lobe, hæmorrhage in the right half of the cerebellum, pericardial petechiæ, and endocardial petechiæ. The blood was never examined; much anæmia was present.

CASE 18.—A girl, aged ten years, was admitted for parotid swelling on Dec. 26th, 1897. She vomited blood frequently and then a lump was felt in the abdomen. She was very anæmic. Three weeks later the spleen reached below the umbilicus. A soft apical systolic murmur could be heard. The red corpuscles numbered 3,300,000 per cubic millimetre and the hæmoglobin was 30 per cent. Leucopenia was present. The liver was just perceptible. The retinæ were normal. This is a case that was published by Dr. L. E. Shaw in vol. lvi. of the Guy's Hospital Reports. Post mortem the spleen weighed 14 ounces and appeared to be normal in structure.

CASE 19.—The patient was a man, aged 28 years, who was admitted in 1900 under my care for general weakness and intermittent pyrexia. Nine months before he had had a bicycle accident. He thought that his side might have been injured. In January, 1900, he had shivering fits, headache, vomiting, and fever, and continued in varying condition. On admission the temperature was 103·4° and the pulse was 120. He was very weak and had slight jaundice. His legs were wasted and his feet were œdematous. The red corpuscles numbered 850,000 per cubic millimetre and the hæmoglobin was 20 per cent. Leucopenia was present. The spleen reached one or two inches below the umbilicus. The liver could not be felt but the abdomen was very tender below the right costal margin. There were retinal hæmorrhages and increasing jaundice. Death ensued in a week. Post mortem the lungs were found to be emphysematous. There were old adhesions. The bronchial glands were large. The liver was large but not tough and weighed 2200 grammes (77 ounces); it appeared to be fatty. The spleen weighed 1334 grammes (47 ounces). There were small infarcts at the edges but no excess of lymphoid tissue. The kidneys weighed 406 grammes (13 ounces).

These were cases in which post-mortem examinations were held. The first, Dr. Shaw's case, must be admitted. The information about the others is too scanty. Of cases without post-mortem examinations we have five.

CASE 20 (1898, the late Dr. Washbourn).—The patient was a man, aged 26 years. He stated that his abdomen was swollen as long as he could remember. A fortnight previously he had suffered from headache and cough and was feverish. He grew worse and epistaxis supervened. For the last few weeks he had been anæmic. On admission the liver was normal. The spleen reached right down to the iliac fossa and in the middle line below the umbilicus. The red corpuscles numbered 4,200,000 per cubic millimetre and the hæmoglobin was 47 per cent. There were a few leucocytes but no poikilocytes. A month later the red corpuscles numbered 4,300,000 per cubic millimetre and the hæmoglobin was 80 per cent. The patient left the hospital.

CASE 21 (1899, Clinical Ward).—The patient was a boy, aged 12 years. He had had measles at the age of two and a half years; then diphtheria and severe epistaxis. He was always liable to hæmorrhages and epistaxis. He was very anæmic. There was slight enlargement of the inguinal glands. Apical and pulmonary systolic murmurs could be heard. The liver and the spleen reached to three inches below the ribs. The red corpuscles numbered 3,000,000 and the white corpuscles 10,700 per cubic millimetre. The hæmoglobin was 20 per cent. Epistaxis was frequent. The patient left the hospital.

This case seems less certain. The tendency to bleed is perhaps no more than a genuine mild hæmophilia. The spleen has as yet not reached a really great size.

CASE 22 (1900, Clinical Ward).—The patient was a woman, aged 44 years, who was admitted for wasting and swelling of the abdomen. She had had hæmoptysis two years previously. 18 months previously she had had acute enteritis, passing blood, and she had passed blood on other occasions since then. She was pale and thin. Her temperature was 100° F. The spleen reached down to the crest of the ilium and within three inches of the umbilicus. The liver was two or three inches below the costal margin. The red corpuscles numbered 4,000,000 and the white corpuscles 7000 per cubic millimetre and the hæmoglobin was 70 per cent. The organs were tender. There were some râles in the chest which soon disappeared. Diarrhœa was present. The patient left the hospital with the blood unaltered.

This case appears to present all the characteristics except the long duration.

CASE 23 (1901, Dr. W. Hale White).—The patient was a male, aged 39 years. He had had pleurisy nine years and mumps six years previously. His nose bled very readily. At Christmas, 1900, acute abdominal pain came on; a fortnight afterwards the pain became worse but he recovered after spending a time in bed. He then brought up dark blood into the mouth repeatedly. In June, 1901, he brought up a clot of blood. The spleen was found to be enlarged. On admission he was sallow but "not markedly anæmic." The liver could just be felt. The spleen reached nearly to the middle line and as low as the level of the umbilicus; it was rather tender. The red corpuscles numbered 3,400,000 per cubic millimetre and the hæmoglobin was 62 per cent. The leucocytes were normal. The temperature was irregular. Arsenic was given. He went out in a fortnight but died ten months later, having suffered from rheumatism, hæmorrhage three months before death, jaundice, and dropsy.

This case is uncertain. The spleen was moderately large and the other characteristics, except a very long duration, were present, but the termination would meet the case of cirrhosis rather than Banti's disease, for which the course is hardly long enough.

CASE 24. (1901, Clinical Ward.)—The patient was a female, aged 37 years. She stated that she had had fits at the age of 12 years. Three years before she had had an enlarged abdomen. She suffered from abdominal pains, morning vomiting, and diarrhœa, the motions at times being mingled with blood. The urine was said also to contain blood. Epistaxis was present. Rapid enlargement of the abdomen had occurred during the last two months. She was anæmic and ascites was present. The liver reached nearly down to the umbilicus. The anterior edge of the spleen reached to the umbilicus and the lower edge to the crest of the ilium. The red corpuscles numbered 4,800,000 and the white corpuscles 2500 per cubic millimetre. The hæmoglobin was 60 per cent. The patient left hospital with no material change in her condition. She had undoubtedly all the characteristics of splenic anæmia. Nothing more can be heard of her.

The next are two cases, brother and sister, who died in Guy's Hospital in 1902 under my care, but they had been frequently in other hospitals, especially in St. Thomas's, and I am indebted to Dr. T. D. Acland for permission to publish some of the facts, which were kindly abstracted for me by Dr. A. E. Russell.

CASE 25.—The sister was in St. Thomas's Hospital in 1897 with anæmia. The edges of the spleen and the liver were palpable. Previously she had had diarrhœa and abdominal pain with slight irregular fever. The red corpuscles numbered 2,240,000 per cubic millimetre. In 1900 she was again in St. Thomas's Hospital. Then her skin was yellowish. The spleen reached nearly down to the level of the umbilicus and the liver to one inch below the ribs. There were no enlarged glands. The red cells numbered 2,746,000 per cubic millimetre and the hæmoglobin was 65 per cent. The number of the leucocytes was not recorded. The polymorphonuclears were in normal proportion. The myelocytes were 2·5 per cent. Two years later, at the age of 10 years, she came into Guy's Hospital. Five days before admission vomiting set in. Now she was collapsed and restless and occasionally she screamed. Her skin was of a brownish-yellow colour, not the yellow of jaundice nor the lemon-yellow of pernicious anæmia, but rather bistre. The spleen was two inches

below the costal margin; it never quite reached the level of the umbilicus. The liver reached to just below the costal margin. The lymph glands were not enlarged. The red corpuscles numbered 1,300,000 and the leucocytes 16,000 per cubic millimetre. The latter were mostly polymorphonuclears. A few poikilocytes were present. The hæmoglobin was 16 per cent. The patient died on the following day.

Necropsy.—At the post-mortem examination the heart showed fatty degeneration. The liver weighed 828 grammes (29 ounces); it was of a coffee blancmange colour and gave a moderate blue reaction with potassium ferrocyanide and hydrochloric acid. The spleen weighed 246 grammes (eight and a half ounces); it was of a firm consistence and had a deep purple colour throughout. There were signs of a recent infarct. Capsulitis was present. The glands were normal. As this was full summer-time histological examination of the organs was impossible.

CASE 26.—The brother was two years older. He was first seen in 1894 at the age of four years at St. Thomas's Hospital and was in altogether eight times. He was always sickly and had been subject from birth every two or three months to severe attacks of diarrhœa in which slime was passed. When first seen the skin was of a yellow waxy tint. There were a few enlarged glands in the groins, the axillæ, and the neck. The spleen was two inches below the costal margin; it was very firm. The edge of the liver could not be felt. The red corpuscles numbered 1,640,000 per cubic millimetre and the hæmoglobin was 45 per cent. An apical systolic murmur could be heard. In six subsequent admissions during the succeeding two years the yellow tint remained the same, there were frequently sickness and diarrhœa, there was irregular and variable fever, and the spleen and the liver both increased in size. The red corpuscles were generally found to be between 2,000,000 and 3,000,000 per cubic millimetre; once only they were above 4,000,000. The leucocytes, which at first were normal, or less than normal, were afterwards recorded as 35,000, 60,000, 40,000, and 35,000 per cubic millimetre. For the eighth time he was admitted into St. Thomas's Hospital, four years later than the last; he was now ten years old. The skin had a yellow tint. The spleen was two inches below the level of the umbilicus; it was smooth and hard. The liver was two inches below the ribs. The red corpuscles numbered 3,034,375 and the leucocytes 12,400 per cubic millimetre, with a slight excess of lymphocytes and 3·3 per cent. of myelocytes. The hæmoglobin was 60 per cent. The patient improved a little. He was admitted into Guy's Hospital under my care two and a half years later (he was now aged 12 years). His final illness was ushered in by rigor, sickness, and diarrhœa; since then drowsiness and delirium. The spleen and liver were much larger than in the case of the girl. The former reached one and a half inches below the level of the umbilicus and to within one inch of the middle line; it was hard and smooth with a sharp anterior edge. The edge of the liver was three and a half inches below the ribs. The glands were not enlarged. The skin was the same yellow-brown bistre colour. The red corpuscles numbered 1,066,600 and the leucocytes 10,000 per cubic millimetre. The hæmoglobin was 20 per cent. Four days later the red corpuscles numbered 1,000,000 and the leucocytes 42,000 per cubic millimetre, the latter being chiefly lymphocytes with coarsely granular eosinophiles. The hæmoglobin was 45 per cent. He died 12 days after the rigor.

Necropsy.—At the post-mortem examination the right pleura was adherent all over. A calcareous nodule was in the apex of the left lower lobe. There was no tubercle anywhere apart from this. There was fatty striation of the muscle of the heart. The spleen weighed 430 grammes (15 ounces); it was firm. There was no capsulitis or infarct. It was of uniform maroon colour throughout. The liver weighed 1028 grammes (36 ounces); it was of a pale orange-brown colour; it gave a partial blue reaction with potassium ferrocyanide and hydrochloric acid. The lymphatic glands were not enlarged. The bone marrow of the femur was of a dark maroon colour, that of the sternum being dark red and that of the ribs red.

These two cases cannot, I think, be regarded as anything else than splenic anæmia, even if they do not conform in every particular to the list we have been working by. Brother and sister and members of a family of which the disease is said to have attacked other senior members, they presented enlarged spleens and pronounced anæmia. When seen by us at Guy's Hospital they were near their end and, indeed, were only under observation respectively three days and nine days before they died. The spleens were large but not enormous, the girl's did not come so low as the level of the umbilicus, and the boy's came one and a half inches below it. There were no enlarged glands; the anæmia was considerable, the red corpuscles being 26 per cent. in one case, 20 per cent. in the other, and the hæmoglobin not very much less, so that the colour index was only a little under 1. The white corpuscles were in moderate excess. The illnesses were of long duration, at least four years in the girl, probably eight in the boy, but we had no history of hæmorrhages. Marked pigmentation was very strikingly present and the liver was enlarged in each case, in the girl very slightly, in the boy considerably more. The larger liver accompanied the larger spleen. I must, however, draw attention to two features in which they present some resemblances to pernicious anæmia—viz., the pronounced fatty degeneration of the heart and the reaction for free iron in the viscera.

When one comes to consider the nature of splenic anæmia it can be approached from the pathological and from the clinical side. I think the cases already referred to show the difficulties that surround the latter question. The whole subject was fully discussed at the meeting of the British Medical Association in August, 1903, in a paper read by Dr. H. D. Rolleston. The questions which arose were mainly these: (1) Is the condition of the spleen distinctive or specific? (2) What is the original cause of the changes usually found therein? (3) How do they bring about the anæmia? I am assuming that the characteristics already laid down as those of splenic anæmia are accepted and that no confusion exists which cannot easily be removed between pernicious anæmia and splenic anæmia.

1. *The condition of the spleen.*—This organ is larger, red, tough, and shows sometimes infarcts which are not of importance in the present question. The points which are of importance are the thickening of the trabeculæ and septa and increase of fibrous tissue throughout the organ, the shrinking of the Malpighian bodies, and their conversion into fibrous tissue, and the presence in great numbers in the pulp of large endothelial cells containing numerous nuclei and blood corpuscles. This condition has been described by several observers as occurring in splenic anæmia, but Dr. R. Salusbury Trevor at this meeting stated that he had found it in other conditions and he went so far as to say that "given only the spleen and no further details we cannot definitely say that we have to do with a case of splenic anæmia." The reticular thickening appears to occur in other long-standing enlargements, as in malarial cachexia; the endothelial increase occurs to a certain extent in acute infections. Leukæmic spleens are generally distinguished by the enlargement of the Malpighian corpuscles and the excess of leucocytes of the type prevalent in the blood. The spleen of pernicious anæmia, as I shall show later, presents little that is distinctive.

2. *The cause of the changes in the spleen* is again largely a matter of speculation. That the anæmia, indeed that the condition of the blood, in any way is a cause of it appears to be unlikely. Numerous cases show that the spleen is often of great size before the anæmia or even any general weakness drives the patient to the medical practitioner, so that very little is known as to the actual early days of the disease; but it is naturally suggested that some such cases as those I have recorded, in which the patients have enlarged spleens with practically good health, may subsequently become anæmic. Professor Osler says he knows many such otherwise healthy splenomegalic patients. The demonstration that they can be converted into splenic anæmia may still be in store for us. The same difficulty exists in the case of splenic leukæmia. It is not even clear whether the fibrous change which must be the more chronic or slowly developed is posterior to the endothelial proliferation or *vice versâ*; at least, different opinions are held as to any one sequence of events being constant, though naturally the more active change or cell proliferation is the more likely to be stimulated constantly and to be an antecedent of the more fixed and permanent fibrous change; or, to put it another way, fibrous tissue is less active metabolically than endothelial cell proliferation and hence more likely to be a terminal process.

Accepting provisionally the cell-growth as the first change in the spleen its cause has still to be found. And here the tendency is to believe in the possibility, if not the probability, that substances of a poisonous nature are conveyed from

the intestine. It is easy to make the suggestion but difficult to substantiate it by proof; and this hiatus in the argument was noted by the President, Professor D. J. Hamilton, at the meeting when this subject was discussed. The subject is presented in too ethereal a form at present to make it possible to advance very strong arguments against it. But attention may be called to the number of diseases which have been explained by this hypothesis of an intestinal toxin—auto-intoxication from the alimentary canal; for instance, chlorosis (Sir Andrew Clark and others), anæmia (Bradshaw), cirrhosis of the liver (Potain), splenomegalic cirrhosis (French authors), tetany (many authors), pernicious anæmia (Hunter), Hodgkin's disease (Senator), splenic anæmia (Rolleston and others), anæmia splenica infantum (Rivière and others), the malaise of biliousness and constipation, and by some authors chorea and osteo arthritis.

3. *How does the enlargement of the spleen cause the anæmia?* This, again, presents difficulties which are met as far as I can see by no one. That it does so appears to be shown by the fact that the anæmia has been cured by removal of the spleen; but this fact may also be taken to show that the spleen is not really wanted for blood formation seeing that directly it is removed the blood is better formed than it was before.

Dr. Rolleston suggests as most probable that poisons produced in the spleen inhibit blood formation, and perhaps this is as far as we can go considering what is known of the formation of the blood. The question here is again, What determines the formation in the spleen of the hypothetical poisons? why do some persons go on for years, as in cases mentioned by Professor Osler and as in the case which I have referred to, with enlarged spleens which do not produce poisons to inhibit the formation of the blood? At any rate it appears to be clear that in ordinary cases the process is not one of hæmolysis; the blood is not destroyed by poisons found in the spleen. The condition of the blood is that of chlorosis and the numerous secondary anæmias, the colour index is less than 1, the hæmoglobin percentage is less than that of the red corpuscles, and as a rule hæmosiderin is not found in the viscera—that is, the liver does not give the Prussian blue reaction with potassium ferrocyanide and hydrochloric acid.

It is interesting to see the views entertained on the subject by that distinguished physician Professor Senator of Berlin, as he propounded them at the meeting of the British Medical Association. He seemed less inclined than the opener of the debate to limit the term to a particular form with the limiting criteria I have referred to, and especially appeared prepared to include under splenic anæmia conditions having a rather definite causation, such cause, however, acting rather as a disposing than a directly exciting cause. He instanced the case of spleens originally enlarged in the course of an infectious disease (typhoid fever or malaria) never completely subsiding and later becoming much enlarged; hereditary syphilis, rickets, and Barlow's disease (infantile scurvy) were also mentioned by him. But in addition to these are cases in which there is no preceding history to explain the occurrence, and in such cases he was in agreement with others in suggesting that injurious substances might reach the spleen by lymphatic channels from the intestinal tube. He recognised that the liver might be affected secondarily, but that ascites might occur without any cirrhotic change in the liver and possibly as a result of the blocking of the portal capillaries with transported large endothelial cells. An important statement of his is that severe anæmia only arises when the bone-marrow is involved by the occurrence in it of circumscribed lymphoid or lymphadenoid spots, myelomata. Another secondary result on which he lays some stress is a swelling of the abdominal lymphatic glands. His conclusions are that splenic anæmia is to be regarded as one form of pseudo-leukæmia, a pseudo-leukæmia lienalis. He thus links it to Hodgkin's disease, or pseudo-leukæmia lymphatica, and admits thirdly a pseudo-leukæmia myelogenica, when the bone-marrow is involved. These conditions, according to him, can be variously combined and, as already stated, he appears to think that his pseudo-leukæmia lienalis can only produce a severe anæmia when it comes into partnership with a pseudo-leukæmia myelogenica, and further, as a corollary to this, that when removal of the spleen has been successful it is because the bone-marrow has not at that time been involved.

The implication of the bone-marrow has been, of course, recorded by others. Rolleston refers to a case by Dr. W. Ewart in which the bone marrow was healthy—it may have been a matter of time relations; while he points out that Sippy, Williamson, and Michell Clarke have seen changes in the bone marrow. In my case (Case 26) the bone-marrow was affected, but this is one of two cases—brother and sister—which show some points of resemblance with pernicious anæmia, and a possible confusion of these two conditions has been suspected in other cases. To this question I may recur again later.

Two cases of splenic anæmia have been recently published by Dr. Dock and Dr. Warthin.[2] In the first—that of a man, aged 41 years, the illness dated back only one week from the first observation; the patient felt a pain in the side and discovered a swelling which proved to be a large spleen reaching one inch to the right of the umbilicus and two and a half inches below it. The skin was somewhat pale and sallow, and the visible mucous membranes were of fair colour. The blood count was as follows: red corpuscles 4,480,000 and leucocytes 5857 per cubic millimetre and hæmoglobin 75 per cent. Of three other counts made in two the red corpuscles were over 4,000,000 per cubic millimetre. A little over four months later the spleen was removed and the patient died four days afterwards. The second case was that of a woman, aged 53 years, who after various dysenteric attacks spreading over six years, had a moderate amount of anæmia, the spleen reaching to the middle line above the umbilicus and to the horizontal level of the umbilicus. The red corpuscles numbered 2,800,000 and the leucocytes 5857 per cubic millimetre, and the hæmoglobin was 60 per cent. of the normal. The abdomen was tapped and yielded 3800 cubic centimetres (less than seven pints). A few days later the red blood corpuscles numbered 4,266,666 and the leucocytes 7894 per cubic millimetre, and the hæmoglobin was 70 per cent. The diagnosis was admittedly difficult. Later a fibroid in the uterus justified a laparotomy and it was then found that the liver was cirrhotic. A month after this operation hæmatemesis occurred and the patient died.

In both cases there was a marked fibrous hyperplasia of the spleen with endothelial proliferation and diminution of the lymphoid tissue. In the first case there was an early stage of cirrhosis of the liver; in the second the greater part of the liver presented the picture of an atrophic cirrhosis. In both cases also there was calcification of the portal vein with stenosis, sclerosis of vessels, especially of the portal area, hyperplasia of hæmolymph nodes and bone-marrow, and new formation of lymphoid tissue in the retroperitoneal fat. Dr. Dock and Dr. Warthin attach much importance to the stenosis of the portal vein and expressly state as bearing on the questions that have been already discussed that "the changes in the spleens of the two cases do not represent any feature that could not be explained by a chronic passive congestion of marked degree." At any rate there "is a possibility that the clinical picture of splenic anæmia or Banti's disease may be caused by a stenosis of the portal vein due to old phlebitis and thrombosis and the resulting stenosis." Naturally they submit that the question cannot be answered by two cases, but their final remarks are that the two cases "may be taken as further evidence in favour of the view that the symptom-complex represents a group of varying pathological conditions, the splenic condition being secondary."

In reference to the question of the occurrence or absence of hæmolysis or blood destruction more than once referred to, Dr. Dock and Dr. Warthin assert that in both these cases there was extensive hæmolysis, as shown in the endothelial phagocytes of certain portions of the spleens and by the activity of phagocytosis in the hæmolymph glands and in the bone-marrow. But they say that "in spite of so great a hæmolysis no hæmosiderin is found outside of these glands (hæmolymph nodes) and the bone-marrow. Iron tests of liver, spleen, and kidneys do not show a trace of iron. The hæmolysis is, therefore, different from that occurring in pernicious anæmia."

BANTI'S DISEASE.

Banti's disease is the termination of splenic anæmia in cirrhosis of the liver, jaundice, and ascites. Too few of these cases have been collected to make one sure of their exact relations and it seems desirable that the cases should be known from the first to justify their inclusion in this group. Out of Professor Osler's 15 cases[3] two, No. 5 and No. 18, seem to have been Banti's disease, and amongst his 38 cases of

[2] American Journal of the Medical Sciences, January, 1904.
[3] Transactions of the Association of American Physicians, 1902.

anæmia and enlarged spleen collected from members of the association possibly three others may have been of this nature. This seems to show that though Banti's disease may be a sequel of splenic anæmia it is not a frequent sequel and from these cases it is shown that splenic anæmia may last a very long time indeed without the secondary changes distinctive of Banti's disease being induced. Thus in his own list there are seven claiming a duration of ten years or more and of these only one (13 years) is certainly Banti's disease and a doubtful one is the longest case—viz., 15 years.

I should like to refer here again to a case which I reported [4] under the name of splenomegalic cirrhosis and to which Professor Osler has alluded in his consideration of the conditions under which the spleen and the liver may be simultaneously enlarged, asking whether such cases may not come within the category of Banti's disease. It was the case of a boy admitted under my care at the age of 12 years with a history of having had scarlet fever three and a half years previously and of having become ill shortly after that. "He had pain in his left side and diarrhœa but no vomiting. Then his skin became yellow and jaundice was recognised." He had well-marked but not intense jaundice, a very large spleen reaching three inches across the middle line below the umbilicus and a moderately enlarged, hard, and slightly rough liver. He had at that time a red blood count 80 per cent. of the normal and shortly afterwards it was 84 per cent. He was of stunted growth and the skin was deeply pigmented. In the course of the next two and a half years his jaundice varied but became ultimately deep; the spleen became larger; the liver increased and was hard, rough, and obviously cirrhotic. Two months before his death the red corpuscles numbered 3,000,000 per cubic millimetre and six weeks only before his death he had ascites. I think it is difficult to assert that this case began as splenic anæmia and subsequently assumed the characters of Banti's disease. Though it is conceivable that he had anæmia before the date at which his illness is said to have commenced and even that his spleen was large then, still the available history is to the effect that jaundice was a very early symptom and practically that jaundice was present throughout, unless it disappeared temporarily at any time prior to his first admission, and if it did that is not a fact that assists particularly the diagnosis of splenic anæmia. Moreover, when first under me, three and a half years after the first symptom, he had no pronounced pallor and blood counts of 84 and 80 per cent., especially at that date, did not lend much support to a diagnosis of splenic anæmia.

It seems to me essential for the diagnosis of Banti's disease that the early history of the case should be known in respect of the blood. A case occurred at Guy's Hospital under Dr. G. Newton Pitt which bears upon this question. The patient was a man, aged 42 years. At about 20 years of age he had had dysentery in Egypt, also enteric fever and pneumonia, and then later some 12 attacks of ague. Five years later he was in the hospital with an enlarged liver and spleen, anæmia, and jaundice. Five years later again presumably at the age of 32 years, he was in again with a suppurating bubo and an enlarged liver and spleen. On the present occasion ascites was present; the spleen reached down to the level of the umbilicus. There were slight jaundice and increasing general œdema. Death ensued. The red blood corpuscles were 104 per cent., the hæmoglobin was 90 per cent., and the leucocytes numbered 4687 per cubic millimetre. The specific gravity was 1051. Post mortem the heart weighed 379 grammes (13 ounces). There was no obvious fatty change. The liver weighed 1554 grammes (55 ounces) and showed typical multilobular cirrhosis. The spleen weighed 1150 grammes (40½ ounces). A considerable fibrous change and a doubtful appearance of lardaceous change could be seen under the microscope; yet the splenic substance was pulpy and soft.

On the following day occurred the case of a boy, aged 14 years, who was admitted with a very large spleen, had cirrhosis of the liver and ascites, and was tapped several times, and died. Though we did not have at first a history of alcoholic indulgence his friends were detected in bringing him brandy and his father practically admitted that he was addicted to illicit drinking. Dr. H. S. French, who made the post-mortem examinations in these two cases, states that "the post-mortem appearances were remarkably alike in most respects."

[4] Guy's Hospital Reports, vol. liv., p. 1.

If anæmia, cirrhosis, enlarged spleen, ascites, and jaundice can result from a cirrhosis primarily alcoholic, the proof that in a similar case the cirrhosis is secondary to a splenic anæmia must depend upon the early history showing a typical blood count and a much enlarged spleen before the liver is under suspicion of being gravely involved.

THE SPLEEN IN PERNICIOUS ANÆMIA.

The difficulties of the diagnosis of splenic anæmia from other cases of splenomegaly with anæmia present themselves in an interesting way in the case of pernicious anæmia. In most cases, as I have pointed out, it is the possibility that a splenomegaly with little or no anæmia may subsequently present the typical features of splenic anæmia which leaves us in doubt, and again the possibility that some lesion sufficient in itself to cause both the enlarged spleen and the anæmia may for a time be concealed from us. But as the disease progresses (which is not the same thing as saying "as time goes on") the diagnostic features are likely to become clearer, though the diagnosis between splenic anæmia and pernicious anæmia may require careful sifting even up to much later stages. From his first series of cases of splenic anæmia Professor Osler subsequently excluded one case as more likely to be pernicious anæmia.

As instances of the same difficulty I may refer again to the brother and sister whose cases I have already considered under the head of "Splenic Anæmia." To begin with, I think one must assume that whatever their disease was it was the same in both. The points in which they resembled pernicious anæmia were that in both there was a high degree of oligocythæmia (the boy 1,066,667 and 1,000,000 and the girl 1,300,000 per cubic millimetre). But this was only a few days before death and in their previous residence at St. Thomas's Hospital the red count varied from 2,000,000 to 3,000,000 per cubic millimetre. In the boy the colour index was far above unity; this also was when he was near his end. A few poikilocytes were noted in the girl's blood and a slight leucocytosis in that of the boy. After death the girl's liver and kidney gave a blue colour with potassium ferrocyanide and hydrochloric acid, "but not of deep enough tint to be called Prussian blue." The liver of the boy gave only a partial blue stain with the same reagents. In both the cardiac muscle was fattily degenerated. The bone-marrow in the femur, sternum, and ribs was dark red or maroon in colour. On the other side are these facts—that the cases affected two members of one family, an occurrence which has been more often recorded in connexion with those still obscure anæmic splenomegalies than with pernicious anæmia, and that the disease began in early childhood. Pernicious anæmia is well known to commence chiefly in adult life. Coupland says that cases are on record in patients as young as seven, 11, and 12 years. In my two cases the children were respectively four and six years when they were first under hospital treatment. The spleen in the girl, who was ten years of age at the time of her death, was two inches below the costal margin. Five years previously, when first seen, "the edges of both liver and spleen were palpable." That the spleen should have enlarged so little in the course of five years is, I must allow, a point rather unfavourable to the inclusion of the case under splenic anæmia. The spleen of the boy, who was 12 years of age at the time of death, was one and a half inches below the level of the umbilicus, an extent compatible with splenic anæmia, but unusual in pernicious anæmia. In 1894, when he was four years old, it was two inches below the costal margin. Five months later it was much larger and reached below the level of the umbilicus and this position of the organ seems to have been maintained, perhaps with slight increase, until the age of six years, when the last record is available prior to his admission to Guy's Hospital. This boy in the first two years of his illness was often described as being of a lemon-yellow tint; but in their last days both children had a pronounced pigmentation of the skin which presented what I described as a bistre—that is, a pale yellowish-brown colour, very like the earliest discolouration seen in Addison's disease. This is to my mind rather a characteristic of splenic anæmia than of pernicious anæmia.

As to the size of the spleen in pernicious anæmia Coupland says [5]: "The spleen may be slightly enlarged but often it is quite small; in colour and consistence it varies, being often pale, sometimes soft, or again rather indurated." Dr. W. Hunter has collected for his work on "Pernicious Anæmia" the results as to the condition of the spleen from several

[5] Allbutt's System of Medicine, vol. v., p. 530.

writers. He gives the normal weight as 225 grammes, or nearly eight ounces, and he says "in the great majority of cases, however, the spleen is described as normal or no mention is made of it." He alludes to three published cases in which it was 10, 16, and 19½ ounces respectively, and from Dr. Pye-Smith's list of 26 cases in which the size of the spleen is given 17 showed some increase—either expressed as "slightly enlarged," "somewhat enlarged," or as a weight in excess of eight ounces.[6] In four cases coming under his own observation Dr. Hunter found the spleen to weigh 19, 11, 10, and 13 ounces respectively. He has found it described as soft and diffluent, pale and soft, soft, or firm and red, firm, or of deep purple colour. Microscopically nothing specific has been described: a simple hyperplasia. In cases under his own observation the spleen has been soft and pulpy, of an extremely deep violet or purplish colour, contrasting in this respect very markedly with the pallor presented by all the other organs in the body. The iron-contents in seven cases examined by him were not in excess of what may be met with in certain other conditions. Dr. Hunter looks elsewhere than to the spleen for a means of diagnosing "pernicious anæmia" proper—viz., to the evidences of hæmolysis and the evidences of infection of which he finds practically always an example in an infective glossitis.

I have recently had under my care a case of pernicious anæmia in which the spleen in a large fat woman was three inches below the left costal margin and the liver was about the same distance below the right. Unfortunately the record of the weight after death is not forthcoming; the colour index of the blood was 1·5 and the liver and kidneys contained an excess of free iron.

A CASE OF ACUTE HÆMORRHAGIC PANCREATITIS.

BY E. T. FISON, M.D. CANTAB., F.R.C.S. EDIN.,
PHYSICIAN TO SALISBURY INFIRMARY.

(The Surgical Notes by L. S. LUCKHAM, M.R.C.S. ENG., *Surgeon to Salisbury Infirmary.)*

ON account of the prominence given to inflammation and other diseases of the pancreas by Mr. A. W. Mayo Robson, and especially so in his most excellent Hunterian lectures,[1] I have thought it desirable to publish notes on the following case.

Dr. H. P. Blackmore, who advised the removal of the case to hospital, has very kindly given me the following history of the patient's condition previously to my seeing him. He was a man, a wine merchant's traveller, aged 39 years, whose history was unimportant except for the fact that about a year previously he had, he said, suffered from an attack of "congestion of the liver." It was believed that he had not been greatly addicted to alcohol. On March 26th, 1904, the bowels were confined but on the next day he had a sharp attack of diarrhœa; on the 28th, about one and a half hours after dinner, he was seized with severe epigastric pain and vomiting. Dr. Blackmore saw him at 5 P.M.; he was then vomiting frequently and complained of severe pain in the epigastrium. He had an anxious expression and looked very ill. Jaundice was absent. The abdomen was rather tense and tympanitic. There was considerable tenderness over the region of the gall-bladder and to a less degree over the stomach. There was no enlargement of the liver or indication of tumour elsewhere. His temperature was 98° F. and the pulse was 110, small, and feeble. On the 29th it was ascertained that the vomiting had continued frequently through the night and that he did not sleep. He still complained of pain in the epigastrium but said that he felt better. His temperature was 97° and the pulse was 120. The bowels had not acted and the amount of urine passed was very small in quantity, dark coloured, and loaded with lithates and bile pigment. On the 30th, under small doses of morphine, he had a more quiet night but the bowels had not acted and the vomiting still continued. His abdomen was more distended and the temperature was 96·8°, the pulse being 125, small, weak, and thready. Dr. Blackmore urged his removal to hospital for relief of what seemed to be obstruction of the bowels.

I saw the patient about one hour after admission to the Salisbury Infirmary. He said that he had been vomiting incessantly since an attack of pain in the pit of the stomach four days before and that his bowels had not acted nor had he passed any flatus; he said, however, that the pain was much less. He was a stout, well-nourished man but with a face of extreme anxiety—in fact, an abdominal face. His tongue was coated with a thick brown fur. The pulse was 120, very thin, and of low tension; the temperature was 97·4°; and the respirations were 36. The abdomen was distended and held rigid but moved fairly well with respiration. On palpation it was somewhat rigid and there was some tenderness in the epigastric region. No local resistance or signs of tumour were made out, the liver dulness was much diminished but was present, the hernial rings were normal, and there were no signs of fluid in the flanks. Auscultation of the chest revealed no basal pleurisy. Two enemata were given (one by a long tube) but both were returned uncoloured by fæcal matter. The patient passed about seven ounces of highly coloured urine in which there was no sugar but a trace of albumin. Inasmuch as the vomiting continued and the pulse was becoming worse, after consultation with my colleague Mr. Luckham it was thought advisable to perform laparotomy and to attempt to relieve what appeared to be obstruction, rather by band or internal hernia high in the intestinal canal.

Before operation the patient was given one-quarter of a grain of morphine and the stomach was washed out. Chloroform was employed and a median incision above the umbilicus was made. As soon as the skin was divided the fat of the abdominal wall was seen to be dotted with opaque yellow areas which at once suggested the condition termed "fat necrosis." The peritoneum being opened a very large quantity of inoffensive and brown fluid welled out; there was no free gas. Inspection of the great omentum revealed the same condition of fat necrosis and on this being turned up with the transverse colon, at the base of the transverse mesocolon and extending across the back of the abdomen an elongated swelling was felt which was made out to be the pancreas and the swollen tissues over it. This mass was dark in colour from hæmorrhage. The peritoneum itself showed only signs of early inflammation, there being no lymph, only injection of vessels. Three incisions were made into the tissues over the pancreas through the transverse mesocolon from which there was no bleeding. The gall-bladder was next inspected and was felt to be full of stones. The median incision was sewn up and drained with a large tube and gauze strips. A fresh incision was made in the right semilunar line, the gall-bladder was opened, and many stones and much grit were removed. A drainage-tube was tied in the gall-bladder, as it was impossible to bring it up to the abdominal wall, it being much contracted, a gauze drain was put in, and the wound was sewn up. During the greater part of the time taken up by the operation the pulse at the wrist was barely discernible. On sensibility returning vomiting at once recommenced in which there was much bile. This vomiting, which latterly contained blood, continued without ceasing till death occurred. The patient was fed per rectum but failed to retain the enemata. Calomel by the mouth and turpentine enemata failed to act on the bowels. The amount of urine excreted was very small, about 11 ounces since the operation, which was drawn off by catheter on two occasions. He complained much of thirst but vomited all that was given by the mouth; he was therefore transfused. His temperature remained subnormal, having never been up to the normal line since the onset of his attack. He gradually lapsed into a state of toxæmia with increasing restlessness and died exactly five days after the initial symptoms.

I made a post-mortem examination on the next day. There was no change of importance in the chest except that the left pleural cavity contained about half a pint of sanious fluid and on the upper surface of the diaphragm were a few spots of fat necrosis. The condition of the abdomen was as follows. It was distended and tympanitic and on opening it the great omentum was found to be loosely adherent to the abdominal wall. On turning this up with the transverse colon and its mesocolon a very large swelling was felt in the situation of the pancreas. The operation incisions were visible in the base of the mesocolon. There was only about a pint of bloody fluid in the peritoneal

[6] Guy's Hospital Reports, vol. xli., 1882, p. 283.
[1] THE LANCET, March 19th (p. 773) and 26th (p. 845) and April 2nd (p. 911), 1904.

cavity. Studded beneath the peritoneum over the abdominal cavity, but principally in its upper part and in the fat around the pancreas, and much so around the ascending and descending colon, were very numerous areas of fat necrosis. These areas were about one-eighth of an inch in diameter, yellowish-white in colour, and on section somewhat gritty. They were of most striking and distinctive appearance (Fig. 1). The jejunum was much distended

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To show the areas of fat necrosis over the abdomen and in and on the abdominal wall.

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General features.—The dark coloured areas are due to necrosis of the parenchyma associated with hæmorrhage, and in the sections from the head and tail are demarcated off from the neighbouring gland acini by well-marked zones of inflammatory small celled infiltration (Fig. 2).

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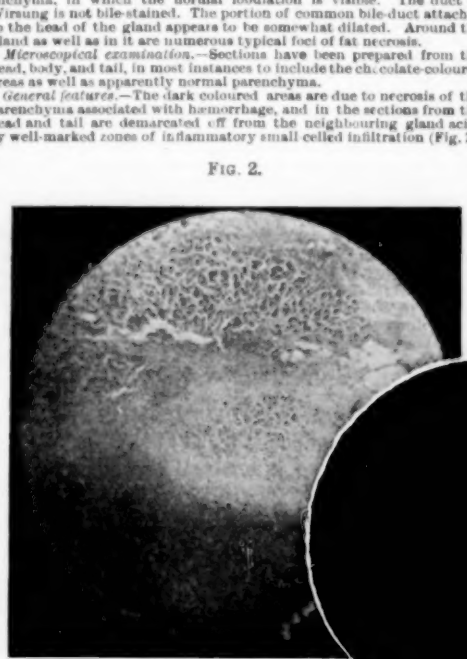

A microphotograph of a section from the pancreas. It shows in the centre an area of parenchyma surrounded by small celled infiltration, above fairly normal parenchyma, and below a necrotic patch which does not stain well and shows no normal glandular arrangement.

In the tail section inflammatory reaction is absent, the necrosed areas merging gradually with the unaffected parenchyma. In the necrosed areas the gland parenchyma is only barely recognisable by a faint alveolar structure, all gland elements having disappeared. The whole of these areas stain badly. In the necrotic portions the smaller blood-vessels are filled with more or less hyaline thrombi. Around the necrotic areas in the head and body is a deposit of old blood pigment, and the appearances rather suggest that here the lesions are of older date than those in the tail. Inflammation is most marked in sections from the head. The remaining gland parenchyma is badly preserved owing to auto-digestion, and the head appears to show a slight grade of chronic interstitial pancreatitis of the interlobular variety. Throughout the section islands of Langerhans are found with difficulty, and from comparison with other sections their number in the tail sections at all events appears to be diminished. Two of the islands of Langerhans found in the tail sections are very large in size; the cells, however, are rather broken up and into one of them hæmorrhage has occurred. Minute changes are not recognisable owing to bad preservation of the tissue. The epithelium of Wirsung's duct shows distinct signs of a catarrhal change.

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In considering the diagnosis of this case from clinical signs in conjunction with the history I was certainly struck by the fact that it did not seem to possess the ordinary signs of an acute abdominal crisis. At present there is no physical sign which distinctively marks out these cases, and the probability is that at present at any rate such cases will be submitted to operation from the point of view of obstruction or rupture of a hollow viscus. Cammidge's test, of great value in the less acute cases, could hardly be of use diagnostically in these most acute cases, as it takes some hours to be completed. I have no

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lisbury.

A CASE OF

UMOCOCCUS ULCERATIVE ENDO-RDITIS TREATED BY ANTIPNEUMO-OCCUS SERUM, THE PNEUMO-COCCUS HAVING BEEN CULTI-VATED FROM THE BLOOD.

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On admission the man was found to be well nourished but looked febrile, with flushed face. The pulse was 100 and of a distinctly jerky character. The respirations were 28 per minute and the temperature was 102·2° F. Cough was present, resulting in a small quantity of muco-pus, rusty in colour. The apex beat of the heart was in the fifth interspace, half an inch outside the nipple line; the impulse was heaving. The area of cardiac dulness was somewhat enlarged, extending one inch to the right of the sternum. There was a systolic murmur at the apex which was also heard in the axilla. At the base there was a to-and-fro murmur, the systolic part of which was conducted upwards to the neck, and the diastolic part down the sternum. At the base of the left lung behind there was dulness to percussion up to the angle of the scapula. Over this dull area the vocal fremitus was increased and the breath sounds were weak except for about one inch along its upper part, where bronchial breathing and bronchophony were heard. Crepitant râles were present over the whole area. The spleen was not felt. The urine contained a slight cloud of albumin.

On Jan. 30th much sweating was present; the signs in the chest were unchanged. On Feb. 1st the patient had two rigors, the temperature reaching 106° at 2 P.M. and 105° at 9 P.M. On the 2nd the rigors were repeated. The signs at the left base were less marked. The patient took food well and did not look very ill except during the rigors. On the 3rd the systolic apex murmur was rougher in quality; redux crepitations were heard over the left base. On the 4th the aortic murmurs were muffled, though still audible. The patient vomited on that day. On the 5th the murmurs were much clearer and louder. The changes in tone and intensity of the murmurs from day to day had been very marked. The vomiting recurred; the patient looked more ill, with slight lividity. On the 8th the sweating continued. The murmurs over the heart had again become muffled. On the 9th there was pain in the dorsum of the left foot, which was red and swollen. On the 10th the right foot and leg felt cold. No pulse could be felt in either anterior or posterior tibial artery. On the 11th the pulse had a more conspicuously aortic character even than hitherto. The patient died suddenly after taking some brandy.

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The serum treatment.—As soon as the result of the blood culture was known on Feb. 2nd, Pane's antipneumococcic serum (No. 1) was obtained and injected hypodermically in 10 cubic centimetre doses each day for five consecutive days. On the sixth day of this treatment no more serum could be obtained. On the seventh day, however, a further small supply was forthcoming of No. 2, stated to be four times the strength of No. 1. Ten cubic centimetres of this were given on the seventh, eighth, ninth, and tenth days respectively. Larger amounts would have been given had they been obtainable. The patient died before a fresh supply arrived from Italy. During the use of the serum the temperature took rather a lower range (see chart), but there was no good reason for thinking that any benefit followed the treatment.

Post-mortem examination.—In the left lung there were some recent hæmorrhagic adhesions over the lower lobe which was tough and airless; on section the lung was greatly congested and rather friable and it just floated in water. The heart weighed 20½ ounces. Both ventricles were greatly hypertrophied and dilated, especially the left. The pulmonary valve was natural. The aortic valve was congenitally malformed, being bicuspid; both cusps were greatly thickened and there were very exuberant vegetations on and below them. One of the cusps showed a perforation of the size of a threepenny-piece; at the base of this the ulceration had spread into the substance of the heart, leading

[2] Münchener Medicinische Wochenschrift.
[3] Johns Hopkins Hospital Bulletins, vol. xii.
[4] Brit. Med. Jour., Feb. 6th, 1904.

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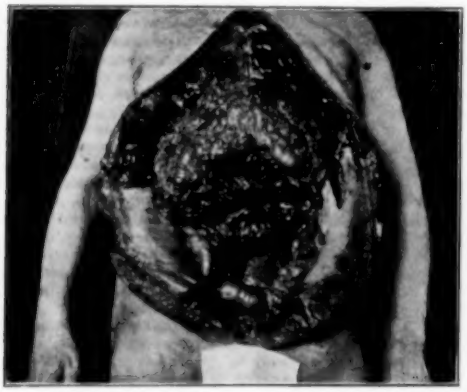

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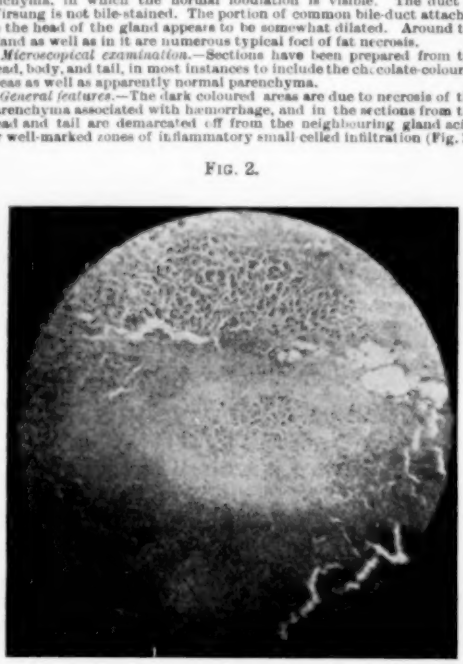

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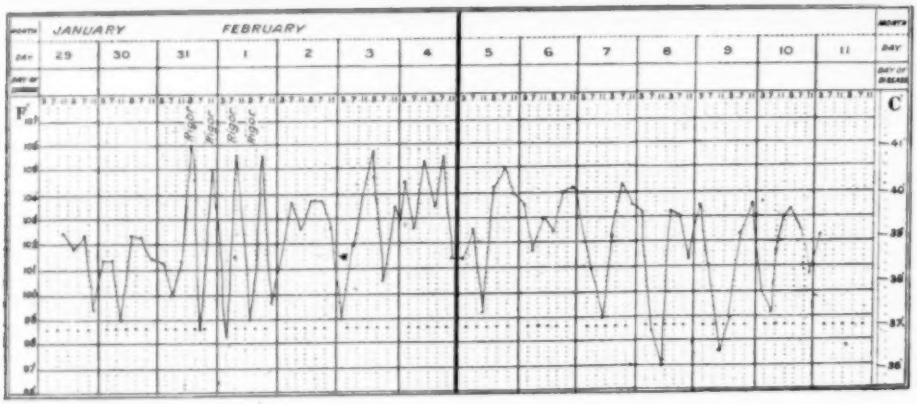
,, 8th	18,000	103·6°
,, 9th	16,000	103·3°

The serum treatment.—As soon as the result of the blood culture was known on Feb. 2nd, Pane's antipneumococcic serum (No. 1) was obtained and injected hypodermically in 10 cubic centimetre doses each day for five consecutive days. On the sixth day of this treatment no more serum could be obtained. On the seventh day, however, a further small supply was forthcoming of No. 2, stated to be four times the strength of No. 1. Ten cubic centimetres of this were given on the seventh, eighth, ninth, and tenth days respectively. Larger amounts would have been given had they been obtainable. The patient died before a fresh supply arrived from Italy. During the use of the serum the temperature took rather a lower range (see chart), but there was no good reason for thinking that any benefit followed the treatment.

Post-mortem examination.—In the left lung there were some recent hæmorrhagic adhesions over the lower lobe which was tough and airless; on section the lung was greatly congested and rather friable and it just floated in water. The heart weighed 20½ ounces. Both ventricles were greatly hypertrophied and dilated, especially the left. The pulmonary valve was natural. The aortic valve was congenitally malformed, being bicuspid; both cusps were greatly thickened and there were very exuberant vegetations on and below them. One of the cusps showed a perforation of the size of a threepenny-piece; at the base of this the ulceration had spread into the substance of the heart, leading

[2] Münchener Medicinische Wochenschrift.
[3] Johns Hopkins Hospital Bulletins, vol. xii.
[4] Brit. Med. Jour., Feb. 6th, 1904.



to a bulging in the right ventricle at the base of the tricuspid valve, one flap of which was directly infected. There were a few vegetations on the mitral valve, spreading from the aortic valve. At the bifurcation of the right popliteal artery was a massive embolus, resembling the cardiac vegetations, riding the angle formed by the branching of the artery and surrounded by recent thrombosis which completely occluded the lumen of both vessels. The spleen weighed 20 ounces; there were infarcts of various sizes and ages, none of which were softened. The organ was placed high in the abdominal cavity, being well supported by an unusually complete costo-splenic ligament, which formed a shelf upon which the spleen rested. This explained the fact that the enlarged spleen was not felt during life. The kidneys weighed 20 ounces together; there were a few small recent infarcts.

A bacteriological examination resulted as follows. Films from the vegetations and from the popliteal clot showed numerous pneumococci. Cultures from the vegetations, the heart's blood, and the spleen all gave good growths of pneumococcus. In cultures from the vegetations there were a few colonies of some post-mortem contamination. In all cases the pneumococci showed capsules staining well with carbol-fuchsin. No other organism was found in the cultures. Pathogenicity: a 24-hours broth culture from a colony on agar (heart's blood) killed a mouse in less than 24 hours. Pneumococci were recovered from the peritoneal exudate and from the heart's blood and were cultivated.

APPENDICITIS.[1]

BY RUSSELL COOMBE, M.A., M.D. CANTAB., F.R.C.S. ENG.,

SURGEON TO THE EXETER DISPENSARY AND TO THE EXETER LYING-IN CHARITY; CONSULTING SURGEON TO THE DEVON AND EXETER DENTAL HOSPITAL.

THE great frequency with which during recent years we are called upon to deal with cases of inflammation of the vermiform appendix and the extreme gravity of many of these cases have forced this subject to the very forefront and relieve me from any necessity for an apology in introducing it to you as a subject for discussion. I propose, therefore, to bring before you certain headings, shortly to run over the more recent work in each direction, to formulate any conclusions I have myself arrived at, and to ask the members of this society to express their own views on the points raised.

The headings I would suggest as most useful for discussion are the following: 1. What is the pathological lesion giving rise to an attack of "appendicitis"? 2. Is appendicitis more frequent than formerly? If so, to what is this increased frequency due? 3. What is the relative value of the various symptoms in appreciating the gravity of an attack of appendicitis and in the diagnosis of the disease; 4. When is it our duty to advise operative interference?

1. WHAT IS THE PATHOLOGICAL LESION GIVING RISE TO AN ATTACK OF "APPENDICITIS"?

Here at the outset we meet with divergent views. Treves[2] in the Cavendish lecture for 1902 says: "It is pure peritonitis; there is no consideration about it which is apart from peritonitis. Until the peritoneum is involved there is no malady." In support of his view he quotes a case of ovariotomy in which he came across "an appendix showing the grossest changes." This woman had never had any symptoms of appendicitis. On the other hand I can refer to two of my own cases in each of which a stenosed and dilated appendix lying free in the abdominal cavity and covered by healthy lustrous peritoneum gave rise to all the symptoms of appendicitis. In each case the removal of the appendix has relieved the patient completely of these symptoms. It is evident, therefore, that peritonitis is not a necessary item in the programme and that the view held by Treves cannot be accepted as an invariable rule. Charters Symonds[3] considers the rise of temperature is due to a septic process in the connective tissue of the appendix. Mansell Moullin[4] refers the pain and tenderness to the post-peritoneal connective tissue. Eccles[5] maintains that appendicitis is a bacterial inflammation of the appendix and that without such a form of inflammation no appendicitis can occur.

Thus besides the view that appendicitis is "pure peritonitis" we have here three different opinions to consider, and I believe that each of them is true from its own point of view. To take Eccles's view first, one can hardly doubt its accuracy. Concretions in the appendix have been found to be simply masses of bacteria; the sloughing of the sides of a wound made to evacuate an appendicular abscess and the fæcal odour so often observed (without the presence of a fæcal fistula) demonstrate clearly enough the bacterial origin of the disease. Then we can hardly believe that so fœtid an inflammation can occur without some inflammation of the neighbouring connective tissue and lymphatics and so we are prepared to accept Charters Symonds's and Mansell Moullin's views. The former has pointed out that the temperature often falls with the definite formation of an abscess; this quite agrees with our experiences elsewhere. The pain may have more than one source. We know that tension of viscera will cause most acute agony and it is doubtless the case that the severe pain of onset is often caused by tension, especially when a concretion is present; this in no way precludes the view that pain and tenderness arise in the post-peritoneal connective tissue; the severe pain of tension may indeed cease but the pain and tenderness of a cellulitis and lymphangitis may still be present.

I think we may safely conclude that appendicitis is a bacterial inflammation of the appendix and that with stenosis of the organ the pain of tension may be severe; that tension may be so great as to cause perforation or

[1] A paper read before the Devon and Exeter Medico-Chirurgical Society.

[2] THE LANCET, June 28th, 1902, p. 1815.

[3] The individual value of the symptoms in perforative peritonitis.

[4] THE LANCET, August 22nd, 1903, p. 514.

[5] Hunterian Lectures, THE LANCET, March 14th, 1903, p. 703.

gangrene, but that these may also result from the virulence of the poison; that in all but the mildest cases the connective tissue and lymphatics are inflamed; and that this inflammation is the cause of the pain and tenderness remaining after the acute pain of onset.

2. IS APPENDICITIS MORE FREQUENT THAN FORMERLY? IF SO, TO WHAT IS THIS INCREASED FREQUENCY DUE?

Treves[6] in his Cavendish lecture and Mayo Robson[7] in his Address in Surgery at Swansea both hold the view that the apparent increase is due to its more correct recognition. I find it frequently stated that this recognition is due to the work of Fitz of Boston in 1886, but it is quite clear that it was fully recognised long before this. Thus Mayo Robson[8] points out that perforative appendicitis and its consequences were well described by both Copland and Burne in 1837, and Wilks and Moxon[9] gave in 1875 a description of appendicitis to which an account of its bacteriology only needs to be added to bring it up to our present knowledge. It ought not to be difficult to ascertain the facts of the case. In the three years 1882–84 St. Batholomew's Hospital admitted an average of some 4000 patients annually. This had risen to some 6000 in the three years 1899–1901. In the former three years there were admitted 117 cases which might possibly be appendicitis—viz., 79 of perityphlitis and 38 of acute peritonitis. These 117 cases showed 23 deaths, of which six were proved post mortem to be due to causes other than appendicitis, leaving the statistics for those years as 111 cases with 17 deaths as the largest number of cases which could by any means be included as cases of appendicitis. Correcting the figures for the increased admissions there should be for the later three years 167 cases admitted, with 26 deaths. What do we actually find? That there were admitted in the later three years 321 cases of perityphlitis and appendicitis with 38 deaths. Moreover, 217 of these cases required operation and we may therefore fairly conclude that without such interference the deaths would (like admissions) have nearly doubled their proportion in the seven years' interval.[10] Barling,[11] quoting from the statistics of the Birmingham General Hospital, arrives at much the same results. The figures which I have shown are fairly convincing of a real increase in the frequency of the disease and if one's personal experience counts for anything it points strongly to the same conclusion. Thus an analysis of the cases for which I have been called to consultations in the surrounding country during the last ten years shows that the proportion of cases of appendicitis to all others has grown from $\frac{1}{10}$ per cent. to 10 per cent. during that period.

What, then, is the cause of this increased frequency? Let me remind you of its incidence: 80 per cent. of cases occur under 30 years of age; 73 per cent. of cases occur in males; therefore 60 per cent. of cases (nearly two-thirds) occur in males under 30 years of age. It has been stated that whatever its cause it must be one that affects all classes of the community, but I would point out that these figures suggest a cause especially affecting young males.

We may reflect that it is during the last 16 or 18 years that appendicitis has assumed its present importance and I believe that dental surgeons will uphold the view that the same period has shown the gravest deterioration in the fitness of the molar teeth for mastication. Admit this point and, further, remember that young men are especially the class who are prone to hurry their meals and often have to pick them up irregularly as best they may, and we shall see how other suggested causes become determining factors. Thus "a loaded cæcum" and tinned and frozen food come into play. Can a better nidus for bacterial development be imagined than a cæcum loaded with partially chewed, undigested masses which have been prepared for rapid decomposition by freezing or preservation for long periods?

3. WHAT IS THE RELATIVE VALUE OF THE VARIOUS SYMPTOMS IN APPRECIATING THE GRAVITY OF AN ATTACK OF APPENDICITIS AND IN THE DIAGNOSIS OF THE DISEASE?

We may here first make some simple classification of the degrees of the disease, remembering always that apparently mild cases may at any time develop serious symptoms: (1) Acute cases, separating diffuse and localised; (2) subacute; and (3) trifling or doubtful cases. We shall probably be called to our patient on account of an attack of abdominal pain; we shall note his appearance; inquire if there has been shivering, vomiting, or diarrhœa, and note his pulse, respiration, and temperature. Let us consider these points first.

Appearance of the patient.—I need not spend time in describing the appearance which constitutes the "abdominal facies." It should be familiar to all of us and I cannot lay too great stress on the importance of learning fully to estimate the value of a patient's appearance. It alone has frequently told me, and told me correctly at the first glance how great was the urgency of a case.

Shivering or a rigor.—Shivering is not uncommon; a definite rigor is a grave symptom and usually indicates a gangrenous appendix.

Vomiting.—This is not uncommon in acute cases; it is often absent in the ultra-acute. It is to be regarded as serious if it returns after an interval and becomes persistent and continuous; it is especially so if it persists in spite of feeding by the mouth having been discontinued.

Diarrhœa.—This usually indicates a severe attack and is looked on by some as indicating toxæmia; in any case it shows that peristalsis is going on and from that point of view is not unfavourable. Constipation is far more frequently present.

Pulse.—All are agreed that the pulse is of the utmost importance, though authorities differ as to whether its character or its rate is of the greater value. Personally I regard the latter symptom chiefly and a point on which I should like to lay the utmost stress is the importance of frequent records of its rate. If this is gradually falling from the rapidity caused by the onset of the attack there is time to wait; if it is remaining steadily above 100, and, still more, if it is increasing in rapidity, delay in operation is inadvisable. In my experience *a rising pulse with a falling temperature is an especially bad sign.* It must, however, be remembered that other symptoms besides the pulse may render interference necessary, for a pelvis full of pus has been found even with a pulse of 80.

Respiration.—It should be noted if this is costal in type. Its rate in relation to the pulse-rate should be carefully charted. This helps to distinguish thoracic disease in considering the diagnosis.

Temperature.—This is a factor of questionable value. It is almost always raised at the onset; I have already spoken of its falling whilst the pulse continues to rise. A too rapid fall to a subnormal temperature, especially if the patient shows any sign of drowsiness, is a bad sign and suggests a gangrenous appendix and increasing toxæmia. One must never forget that severe peritonitis may be present with a subnormal temperature. Such a temperature, with a rapid pulse, a fixed abdomen, no local tumour, and an abdominal facies, should arouse our gravest anxieties. If after falling steadily for a few days from the onset it begins to rise again, and especially if there be with this morning remissions, a localised abscess must be carefully watched for.

I have left the question of pain to the last, and as this will lead us to the examination of the abdomen I may enumerate the points which we have to investigate in this direction: (1) distension; (2) fixity; (3) rigidity; (4) pain; (5) superficial tenderness (hyperæsthesia); (6) deep tenderness; (7) tumour; (8) percussion results, including the presence or absence of peritoneal effusion; and (9) œdema of the abdominal wall. Perhaps I may here emphasise the necessity of having a thoroughly good light for inspection of the abdomen; care must be taken that the patient is lying perfectly level and for the purpose of palpation the knees must be well drawn up.

1. *Distension* implies arrest of peristalsis which in the early stages is reflex and indicates diffuse mischief; in the middle stages the arrest may have been produced by the exhibition of opium, a drug which, except for one dose to relieve the acute pain of the onset, is to be avoided most scrupulously in appendicitis; in the later stages the condition is due to decomposition of the intestinal contents and consequent paralytic distension. Peristalsis may be listened for with the stethoscope and measurements to estimate variations in distension should be taken and recorded.

2. *Fixity.*—This and the next symptom are of great importance; there should be no hurry in examination and the patient's attention should be diverted so far as possible.

[6] Loc. cit.
[7] THE LANCET, August 1st, 1903, p. 292.
[8] Ibid.
[9] Wilks and Moxon: Lectures on Pathological Anatomy, second edition, 1875.
[10] Cf. McDougall: THE LANCET, Feb. 21st, 1903, p. 502.
[11] Brit. Med. Jour., Jan. 10th, 1903.

I have often found that a patient who will hardly move the abdomen with the observer's hand on the bare skin will move it freely when protected by the sheet or a thin warm towel. The costal type of respiration with abdominal fixation is of great diagnostic value, but even with a soft abdomen careful watching may show limitation of movement, the inspiratory act ceasing, possibly with a catch, before its full development.

3. *Rigidity.*—At the onset this may involve a considerable area of the abdomen; it should become more localised as the severe pain of the onset subsides. If it remains present over a large area it points to a considerable and diffuse peritonitis beneath. Thus I am accustomed to consider the non-formation within some 48 hours of the onset of "a lump" (be it local muscular rigidity or be it inflammatory matting) in a case not obviously of the subacute type as a grave sign and as indicating immediate interference. On the other hand, in some cases it is entirely absent; a perforated and gangrenous appendix has been found with quite soft abdominal muscles.

4. *Pain.*—It is a most important matter to have the patient's own story of the onset and to let him indicate the position in which he first felt pain. What is the cause of the pain in appendicitis? We know that the abdominal viscera are devoid of sensory nerves, as also is the visceral peritoneum. Inflammation of the parietal peritoneum or of the post-peritoneal cellular tissue and traction on the mesentery are the remaining sources of pain; the chief situations of pain in appendicitis are thus to be explained. Umbilical pain is due to peristalsis pulling on the mesentery. In operating under local anæsthesia traction on the root of the mesentery has been found to produce the same umbilical pain that arises from excessive peristalsis. Pain in the region of the appendix is usually referred to McBurney's point which, as I shall point out later, is the situation where the lymphatics of the appendix reach the post-peritoneal connective tissue. Moreover, should the appendix be in contact with the parietal peritoneum in any direction and communicate inflammation thereto, pain will also be felt in that situation. Thus I recently saw a lad, aged 17 years (the son of a medical man) in whom pain was most unusually severe at McBurney's point and was felt near the front of the abdomen. Twice in one night his father had to give morphine injections to allay this severe pain. Two days later I removed a sloughing and perforated appendix lying in contact with, and adherent to, the anterior abdominal wall.

5. *Superficial tenderness (hyperæsthesia).*—Head[12] and Mackenzie[13] independently first drew attention to this point in 1892, but little work has been done in the matter until recently. Mackenzie's explanation is that at certain spots small sensory nerve trunks approach the surface and thus are readily accessible to pressure. Head's view is that the stimulus required to call forth this cutaneous hyperæsthesia is that of tension. It is not, as in the case of pleurisy, due to direct irritation of the nerve trunks. In support of this he points out and teaches that it disappears on perforation or gangrene of the appendix. Since I have known of this symptom I have invariably looked for it and up to the present my observations have entirely confirmed Head's teaching. The method of searching for the symptom is by gently pinching or stroking the skin outside the suspected area and working round until the patch affected has been defined.

In appendicitis hyperæsthesia is found to affect chiefly the eleventh dorsal area mapped out by Head, encroaching on the two adjoining segments in severe cases and being limited to portions of the area in slighter cases. Sherren,[14] whilst registrar to the London Hospital, carefully investigated this symptom. Out of 81 cases operated on it was present in 19 and out of these perforation was only found in two cases, and in those two it had disappeared between the time of admission and the time of operation. In the remaining 62 cases it was absent on admission. In 23 of these cases perforation, and in 34 abscess, was found; whilst five were mild cases and were operated on after the subsidence of the attack. This symptom may be absent in secondary attacks but it is probably present at all times in primary attacks, except in fulminating cases and where an abscess has formed; its situation is not affected by the position of the appendix and it tends to pass off gradually with the subsidence of the attack; but should it disappear suddenly it points, as I have already stated, to perforation or gangrene of the appendix.

6. *Deep tenderness.*—It is obvious that we must distinguish early and late deep tenderness. The latter occurs in abscess cases and will vary with the situation of the abscess. Thus I saw a case recently in which this tenderness was just below the right costal margin, the pus having travelled up behind the colon. This abscess was opened and healed. It recurred abroad some months later and burst internally. I afterwards operated in a quiescent interval and found the patient to be the subject of an undescended cæcum. Early deep tenderness is associated with McBurney's point and much discussion has centred round the explanation of this symptom. McBurney's view was that this spot indicated the base of the appendix. It is obvious it could only indicate its base since the spot does not vary with the different positions assumed by the appendix. Eccles,[15] by the way, very well describes the most frequent of these as being respectively N., N.E., and S.E. At the request of Sir Frederick Treves[16] Dr. Keith made some investigations on this subject at the London Hospital. In 50 formalin-hardened bodies the base of the appendix was found to be almost invariably an inch below McBurney's spot. What was found to correspond with the spot was the ileo-cæcal valve. Moreover, in nearly all living subjects some tenderness can be found here. Thus, in 24 out of 27 medical students such a tender spot was found on the right side; in 11 it was exactly at the point, in nine a little above, and in four a little below. More recently as a result of Head's work the view has obtained that this being the point at which the mesentery of the appendix is attached to the posterior abdominal wall the tenderness to be found there in appendicitis is due to inflammation of the lymphatics of the appendix which run in its mesentery. In support of this view an interesting case is related in which it was present in a case of appendicitis in a patient the subject of non-descent of the cæcum. Here it could not have been referred to the base of the appendix or to the ileo-cæcal valve.

7. *Tumour.*—In later stages with a definite abscess there may be no question on this point. It is far otherwise in the earlier stages. Mackenzie[17] draws attention to the fact that where a tumour has been diagnosed by competent observers it has not unfrequently been undiscovered at an operation and he points out that Sherrington has demonstrated a peculiar power the flat abdominal muscles have of limited contraction. These muscles are supplied by more than one spinal nerve and if only one nerve root be stimulated limited contractions occur, whereas on stimulating a nerve (or one root of a nerve) going to a long muscle the whole muscle contracts. This phenomenon probably explains the so-called "phantom appendix" to which Treves[18] has specially called attention. Eccles[19] makes another suggestion—that it is the anterior longitudinal muscular band of the cæcum hardening under palpation. Personally I am convinced that local muscular rigidity is often taken for a tumour. In the early stages of an attack one often finds board-like muscles which absolutely defy palpation of underlying structures. It is only later, when rigidity has passed off, that a tumour can be felt through the muscles. More important than the formation of a tumour is its non-formation. It is precisely these cases in which no tumour appears within a short time of onset which give rise to the gravest anxiety and it is in these that immediate operative interference is most urgently indicated.

8. *Percussion.*—Battle[20] lays great stress on the presence or absence of peritoneal effusion and he recommends change of position to make the diagnosis sure. Barling[21] considers percussion of little value, pointing out that intestinal resonance may obscure a collection of fluid of some amount. Personally I have no great faith in percussion in such cases and I think the last thing in the world I should do would be to move the patient about unnecessarily from side to side and so risk the giving way of adhesions, the only result of which would be to allow foul fluid in the right flank to travel across to the opposite side. Moreover, in my experience such fluid, even when not limited by true adhesions, fortunately often has in front of it a zone of sticky peritoneum and therefore does not pass about spontaneously like a serous effusion in a lustrous peritoneum. We do not want to help it to do so.

[12] Sherren: THE LANCET, Sept. 19th, 1903, p. 816.
[13] Brit. Med. Jour., July 11th, 1903.
[14] Loc. cit.
[15] Loc. cit.
[16] Loc. cit.
[17] Loc. cit.
[18] Ibid.
[19] Ibid.
[20] THE LANCET, June 14th, 1902, p. 1679.
[21] Loc. cit.

9. *Œdema of the skin.*—This is a point that I have at times found helpful in determining the existence of underlying pus.

Having now completed our examination of the abdomen four points only remain for consideration.

1. *Examination of the rectum.*—This should never be omitted. It is especially required in women to distinguish pelvic inflammations.

2. *Leucocyte count.*—This has recently been shown to be of great importance and should never be omitted. During the first week, at least, it should be done daily; its advance or decrease will be of great assistance in those cases in which between the fourth and eighth day there are suggestions of the formation of an abscess. It is also useful later if there is anything to suggest the formation of a secondary abscess and it helps to distinguish appendicitis from other diseases. It is, however, no guide to the *amount* of pus present; thus a count of 17,000 has been found with a pint of pus and a count of 25,000 with only a couple of drachms. Variations[22] from normal to 62,500 have been observed. It may not appear in fulminating cases, where the resistance of the patient is too feeble to react to the toxæmia or where an abscess of some standing is well walled off. As one might expect, the largest counts are found in acute cases in robust young adults with strong reaction. In the lower counts—e.g., from 15,000 to 20,000—its advance or decline must be our guide. Personally, I have found this symptom of great service and even where an actual count has been impossible the altered proportion of leucocytes to erythrocytes is very apparent.

3. *Examination of the urine.*—This, a matter of routine in hospital work, should, if possible, not be omitted in private practice. I am aware that it may be difficult in emergencies at long distances, but the cases referred to by Mr. Rutherford Morison[23] serve to emphasise its importance. He reports six cases in which all the symptoms of acute abdominal illness have been present and the abdomen has been opened and no lesion revealed. The patients are usually at or past middle age and have "a curious, grey, apathetic look, with urine of low specific gravity, sometimes containing blood and albumin." A recognition of these cases has enabled him to avert operations on patients sent in for this purpose.

4. *Period of repose.*—We must always bear in mind when seeing an abdominal case within 24 hours of its onset that our first visit may be paid during the "period of repose" and that therefore the patient's life may entirely depend on at least a second, and if there is the least doubt perhaps several, visits at reasonably short intervals.

With the remainder of this part of the subject I do not propose to take long. It would be of little use to give a list of those conditions which have been mistaken for appendicitis or for which appendicitis has been mistaken. A careful investigation of the symptoms I have enumerated will, I believe, keep one from avoidable errors; thus the blood count will distinguish from typhoid fever and several other conditions; rectal examinations will distinguish diseases peculiar to women; the relation of pulse to respiration, if charted as I have suggested, will help to distinguish pneumonia and pleurisy; whilst the course of the temperature as well as other signs will be of use in distinguishing biliary or renal colic.

The fourth point I have to suggest for discussion is the question,

WHEN IS IT OUR DUTY TO ADVISE OPERATIVE INTERFERENCE?

Let us consider first the natural tendency and conditions of the disease. The tendency of an attack of appendicitis is to recovery, especially with suitable medical treatment. In my experience most of the cases seen in private practice require no surgical interference; but this does not hold good in hospital practice where only the more acute cases get sent in. The appendix, too, is in the majority of cases snugly tucked away in one corner of the abdomen under cover of the cæcum and it is a small organ from which no great leakage is likely to arise; thus there is usually time for adhesions to form. Further, we know that removal of the appendix during an attack is a proceeding leading to a high mortality, whilst its removal during a quiescent interval shows a low mortality. Thus we can at once decide not to advise operation in the acute stage simply with a view to removing the offending organ; there must be other and serious reasons for operating. To my mind three such reasons exist—(1) in acute cases, any ground for doubting if the peritoneal inflammation is localised; (2) a belief on our part that pus has formed; and (3) the existence of "peritonism." This last term Treves[24] applies to the complex of symptoms indicating a grave abdominal crisis. It is characterised by pain, profound exhaustion, distressing anxiety, pallor, a small soft quick pulse, cold extremities, shallow respiration, and vomiting. The word has been differently used by others, so it is well to be clear about its meaning in the present connexion.

It is when we have laid down our guiding rules and begin to apply them that our difficulties arise and the necessity for judgment comes into play. I have found the following points the most trustworthy guides:—

I. *In acute diffuse cases.*—1. The presence of symptoms of an abdominal catastrophe; in other words, the condition just described as "peritonism." In this connexion there are two points invariably to be borne in mind: (*a*) that we may be seeing the patient in the period of repose; and (*b*) that morphine may have been given. This point should never fail to be inquired into. 2. Increasing distension of the abdomen. 3. A large area of muscular rigidity and the failure of such rigidity to become localised. 4. The non-appearance of a localised swelling within 48 hours of the onset. 5. The continuance of the rapid pulse of onset for a dozen hours or more; still more a steady quickening of the pulse. 6. Evidence of peritoneal effusion, if obvious. 7. Disappearance of superficial tenderness without corresponding amelioration in the patient's symptoms. 8. Marked and increasing leucocytosis.

II. *In early abscess cases.*—1. Pulse beginning to rise again after first fall, especially if there be a steady quickening. 2. Temperature beginning to rise again after falling during the first three or four days, especially if the rises be in the evening with morning remissions. 3. A fairly defined tumour increasing steadily in size. 4. Œdema of the skin. 5. Leucocytosis, especially if increasing.

III. *In later abscess cases.*—A similar series of symptoms occurring at a later period would be my guides.

Finally, I prefer to be guided by the positive indications and to discount the possible absence of a symptom frequently present; above all things I take seriously a pulse rising steadily in rate and the absence of signs of localisation as shown by a "lump."

When should we advise operation in the quiescent stage? Saundby[25] says after the third attack; I think we shall all agree that this is not too soon. Mayo Robson[26] says: "I have no hesitation in saying that had I an attack of appendicitis I should prefer accepting the infinitesimal risk of removing the organ directly the attack was over to the decided risk of waiting to the next seizure which might be one of the acute type." Treves's view is that the whole matter is summed up in this question: "What is the probability of relapse?" At one time relapses occurred in from 20 to 30 per cent. of cases. There is little doubt that relapses are much more frequent now than formerly.

Seeing the low mortality resulting from operation in the quiescent interval the advice I have given to patients has agreed with the views of Treves and Robson rather than with those of Saundby and I have not had a case in which the appendix was in a condition to make me regret that I had opened the abdomen to remove it and I have seen cases which lead me to believe that the so-called "first attacks" have been preceded by what I have designated "trifling attacks." Two such cases are worth relating. One was a woman, aged 25 years, with a partially diffused attack. Her only previous history was that she did remember having two years previously had enough pain in the appendicular region to keep her in bed for a day. I say a partially diffused attack because in one direction an old adhesion was limiting pus in the peritoneum and binding the cæcum down; in other directions there was no such limitation and the pus was free; a five-inch long gangrenous and perforated appendix was removed, recovery ensuing. In the other case I operated in a quiescent interval after a so-called first attack which had, however, been, like the other case, preceded by a day's pain some time before. The appendix was stenosed, dilated, and full of muco-pus. It was firmly adherent to the posterior parietal peritoneum and these adhesions were certainly not from the recent attack. There

[22] Longridge: THE LANCET, July 12th, 1902, p. 74.
[23] THE LANCET, Jan. 31st, 1903, p. 279.
[24] System of Surgery, 1896, vol. ii., p. 605.
[25] Brit. Med. Jour., Oct. 24th, 1903.
[26] Loc. cit.

were also considerable omental adhesions which were of the later date.

One point that should especially indicate removal after a first attack is the liability of a patient to become pregnant. It has been found that when appendicitis has gone on to perforation or gangrene during pregnancy about 70 per cent.[27] of cases have been fatal both to mother and child. Abortion is usual and after the fourth month, when the uterus has risen out of the pelvis, it often forms part of the wall of the abscess cavity which ruptures as the uterus contracts, setting up diffuse and fatal peritonitis.

I hope I have not detained you too long: the subject is a large one and I have not been able to put before you innumerable points and considerations of great interest. That our meetings are necessarily limited in time must be my apology for the many omissions which must be apparent to you all.

Exeter.

SOME POINTS IN THE DIAGNOSIS OF APPENDICITIS.[1]

BY W. BLAIR BELL, M.D. LOND., M.R.C.S. ENG.

ON account of the very wide range which might be covered under this title I have confined myself to those points in the diagnosis of the various stages of appendicitis which have impressed me most from time to time and it is not my intention to touch upon such points as are very obvious and well known or to deal with the valuable recognition of leucocytosis, nor shall I undertake the detailed differentiation of the symptoms dependent on the variations in the direction of the appendix. In the first place, I should like to refer briefly to the condition known as

Appendicular colic.—The bare existence of this is by many denied; by others it is recognised, and rightly, I believe, to be the first indication that an appendix is liable to give future trouble, either because of the patency of its orifice or from the position which it occupies in relation to the cæcum. Unfortunately, attacks of appendicular colic do not often come under observation at the outset and evidence of them is only obtained by the surgeon at some future date when he is collecting the past history of a now obviously inflamed appendix. As I have seen this condition in *initial* attacks the following is a summary of what occurs. The patient, hitherto in perfect health perhaps, or slightly or markedly troubled with constipation, is suddenly seized with sharp pain commencing in the right iliac fossa. This pain lasts from half an hour to three hours and then rapidly disappears, leaving tenderness for from one to four days. Once the pain has subsided it is unusual for it to return if the patient is kept quietly in bed. The temperature is not raised but the pain may cause a slight increase in the pulse-rate. There is very little, if any, reflex muscular rigidity. It may perhaps be advisable to point out that a careful distinction must be made between reflex or *fixed* muscular rigidity—a rigidity which is noticeable on the patient taking a deep inspiration—and spasmodic rigidity which occurs on palpation. The former, as I have said, is absent in appendicular colic, whereas the latter—the spasmodic rigidity—is often marked. Appendicular colic may be distinguished from renal or biliary colic (1) by the history; (2) by the character of the pain, which though sharp is nothing like as severe as that produced by renal or biliary colic; and (3) by the ability of the patient in an initial attack of appendicular colic to localise the site of the pain. From intestinal colic it may be distinguished by the continuous nature of the pain in appendicular colic, by the fixed and recognisable position of it, and by the fact that pressure on the abdomen, which relieves intestinal colic, aggravates colic of appendicular origin. Appendicular colic, as I have found on several occasions, must also be distinguished from a colic of uterine origin which is seen in girls who for some reason, constitutional or local, have not menstruated regularly. If the possibility of this is borne in mind the differentiation is very simple.

Acute appendicitis, the next variety or stage to which I shall refer, covers such a wide field that I can do little more than tabulate the mistakes which I have seen made or have made myself. I find that the following conditions have come under my notice—either I or someone else having made a wrong diagnosis of appendicitis or *vice versâ*, or failed to recognise the condition at all: (1) intussusception; (2) ulceration and stenosis of Meckel's diverticulum; (3) tuberculosis of the ileum with abscess; (4) pyosalpinx; (5) tubal pregnancy; (6) perforated gastric ulcer; (7) liver abscess; and (8) no diagnosis considered possible. Formidable as this list seems, I fancy it could easily be trebled by those of wider experience than mine. Taking these collectively, I may say that each case had points of individual interest, but I propose to deal only with some of those of more or less general application.

First, if the patient is a woman on no account should one fail to exclude any possibility of right sided tubal or ovarian trouble. This may sound superfluous advice but I am sure that even with the greatest care mistakes are often made—in fact, it may not always be possible to avoid them—but I have myself seen or heard of so many errors where the patient is a female that I am certain we cannot be too cautious. Without saying more I may confess that it has been very strongly brought home to me on more than one occasion.

The second point of general application is the occurrence of cutaneous hyperæsthesia. It has been stated that this hyperæsthesia is, in appendicitis, limited to the areas of skin supplied by the eleventh dorsal nerve on the right side. Those who have studied this symptom also assert that the disappearance of it indicates in many cases gangrene or perforation. From my own observations I place great value on this symptom when it is present but it is by no means a constant one. The value is positive but never negative. Further, one must remember that if the peritoneal involvement is extensive the hyperæsthesia of the skin is not limited to the eleventh dorsal nerve but may invade the areas supplied by the tenth and even the ninth nerve on the right side. When present it is a very early sign and I have noted it before any muscular rigidity was found.

The third point concerns the localisation of the lesion when acute perforation of the appendix has taken place. I do not say the diagnosis of the actual lesion—for any severe lesion in the same region may give the same sign—but the localisation. This is a matter of some importance, for I think it commonly occurs, even with surgeons of the greatest skill, that before the lesion is found the abdomen has been explored in other directions than the right one and possibly through more opening than one, or even two. The first time that I was brought face to face with this difficulty was in the case of a patient who had been seized a few hours previously with the most violent abdominal pain; it was *general* and was accompanied by *general* rigidity. When I saw the patient she was much collapsed. A diagnosis of perforation of the stomach had been made by the medical man who first saw the patient, and indeed such might well have been the case if only the past history (as usual, of "gastritis") had been considered. The presence of liver dulness, with a few other signs of uncertain value, rather led me to a diagnosis of perforation of the appendix but I was by no means certain until I noticed that as anæsthesia progressed the muscle areas overlying the region of the appendix remained rigid after the rest of the abdominal wall had relaxed. Then at once I knew where to look for the lesion. Subsequent observations have proved to me the accuracy of this indication, so that I would lay it down as a law that *in general rigidity of the abdomen consequent upon some acute lesion, the site of the lesion is situated beneath that area of muscular rigidity which is the latest to relax as anæsthesia progresses.*

My fourth and last point concerning acute appendicitis in a general way relates to the pulse, the temperature, and the disappearance of pain. By all means we must be guided in our reasonings by the pulse and temperature, but I think that we are inclined to forget that these can only be taken in conjunction with other signs, and that, although in an acute inflammatory condition we expect a high temperature and a rapid pulse, we may commit a grave error of judgment if we are able to recognise improvement only in a low temperature, a slow pulse, and the disappearance of pain, a state often indicative of gangrenous processes, septic peritonitis, and the beginning of the end—not of convalescence. A true appreciation of alterations of pulse rate and pulse character is one of the finest guides we have to the trend of

[27] Eccles: loc. cit.

[1] Abstract of a paper read before the Liverpool Medical Institution.

events in serious abdominal lesions among which acute appendicitis takes such a prominent place.

Chronic appendicitis must be carefully distinguished from relapsing or intermittent appendicitis. Strange though it may seem, the existence of a true chronic appendicitis is for the most part denied by both physicians and surgeons, each viewing the possibility of such a condition from opposite etiological standpoints. To me, however, it seems that this variety is becoming very common or at any rate can be frequently found if sought for. From its mode of origin, to be mentioned presently, it is obvious that it is found mostly among the wealthy classes and in the male sex. The patient usually complains of flatulence as the initial symptom, then pain, sometimes of a dull character, more often severe and griping, after food and it should be carefully noted that it usually comes on some time after food—i.e., from one to three hours. He is, too, a victim to constipation, from which, I take it, the bad dreams and "queer feelings" in the head arise of which he so often complains. The abdominal pain cannot always be accurately localised, either by the patient's own sensations or by palpation. As a rule the pain is located in the umbilical or hypogastric region. The pulse and temperature are found to be normal and the tongue clean but flabby. A thorough examination of the abdomen shows a slightly dilated stomach; if unwise, and how often is this the case, one will be tempted to be satisfied with that; but there is more, his colon is dilated, and more especially, or perhaps only, his cæcum. I have often seen a distinct bulging of the right iliac region from the dilated cæcum. This condition of alimentary dilatation is the result of good living, over-eating, and boiting indigestible food—habits spread probably over many years. It is, of course, perfectly possible for this condition to exist—indeed, it always does so at first—without any trouble in the appendix; but given a large flaccid cæcum, which is never properly emptied, septic to the last degree, and we can readily understand how frequently an appendix, prone by position or congenital structure, becomes involved. Were these cases to be recognised more frequently and to come under treatment in time they might be cured and the appendix be saved, but as a rule it is the infection of the appendix which prevents recovery and brings the case under treatment, an acute attack having perhaps supervened at last. From this it will be seen that I believe that a primary so-called "typhlitis" can exist, but while I recognise this fact I as truly recognise that it is of a slow and chronic nature, and that it cannot for long continue without infection of the appendix. Deaver in his comprehensive work on appendicitis says: "That the diagnosis (of appendicitis) is not always made is due to several causes, of which the most important are the persisting belief in a primary typhlitis, the non-appreciation of the frequency and seriousness of appendicitis, and the all too common habit of speaking ..... of 'inflammation of the bowels.'" Though most of that is only too true, yet in the blind warfare waged against the mention of "typhlitis" in relation to appendicitis the pendulum has been swung from one extreme to the other; acute appendicitis and its chronic relapsing form have alone been recognised, while the true chronic variety—probably the commonest of all—has escaped notice. It is true that acute appendicitis is not typhlitis, but it is, I believe, equally true that slow chronic dilatation of the cæcum with chronic typhlitis is the originating cause of what I term true chronic appendicitis.

Of the enormous differences of opinion which will always exist about the removal of the appendix in these cases I need not speak; let those hesitate to perform this necessary operation who will, so long as the condition is realised and the danger understood, so long as the patients are not treated for "gastritis," "liver," or "neurasthenia." To decide when the condition has passed from a simple cæcal complaint to an involvement of the appendix is, therefore, a matter of great importance. In endeavouring to decide this point the following considerations are worthy of notice. 1. Should the history be as I have related, but with exacerbations of the pain at intervals which may be attacks of true appendicular colic, such as I have mentioned above, or attacks of a more obscure nature accompanied or not by a raised temperature or vomiting—the pain being in the appendix region or elsewhere and possibly of a more fixed nature—then it is probable that the case will not recover until the appendix has been removed. 2. Any case of the type described above, which resists treatment by aperients, antiseptics such as salol, lavage, restricted and selected diet, and, above all, any case aggravated instead of improved by a course of abdominal massage, has some irritant cause as its basis: that cause is a chronic inflamed appendix. 3. The following signs, also, I have found useful in determining appendix infection. (*a*) Hyperæsthesia. This may be quite local and is generally one small spot on the outer edge of the rectus muscle—probably coincidental with McBurney's point. The sensitive area is below the skin but not in the abdomen, and light side-to-side pressure is required to find it, but it is rarely in the same place in two individuals. Sometimes, too, there is a cutaneous hyperæsthesia (which does not seem limited to the area of the eleventh dorsal nerve) and this is generally accidentally elicited by brushing against the individual or by the pressure of his trousers. (*b*) Reflex-pain sign, as I would term it. If the patient complains of pain in the neighbourhood of the umbilicus or hypogastrium it is found that pressure by palpation in those regions does not increase the pain, but that pressure over the appendix—not tender perhaps in itself—does increase this reflex pain elsewhere.

Certainty of diagnosis, and certainty therefore as to the benefit of operation in these chronic cases, is to be aimed at. There should be no room for operation "on spec." if I may so term it. Due care in the selection, which will be attended by successful results, is absolutely necessary. There need, in short, be no indiscriminate appendectomising of every victim to indigestion; at the same time there is a field, as I have endeavoured to show, for the successful treatment by operation of a class of case whose life is too often taken up visiting physician after physician in the hope of finding a cure for his indigestion. A word of warning is necessary: it must be remembered that in these cases the removal of the appendix must be followed by the treatment mentioned above to cure the dilated cæcum, else only a partially successful result will be obtained.

Liverpool.

REMOVAL OF THE SEMICIRCULAR CANALS IN A CASE OF UNILATERAL AURAL VERTIGO.[1]

BY RICHARD LAKE, F.R.C.S. ENG.,
SURGEON, ROYAL EAR HOSPITAL, LONDON.

THE patient was a woman, aged 21 years, who had been the subject of attacks of aural vertigo, combined with sickness and vomiting, with gradually increasing deafness and tinnitus, the whole duration of the disease being five years. No cause could be found for the origin of the deafness. During this period she had been subjected to long courses of treatment, both by careful dieting and by the administration of various drugs of repute for the relief of these symptoms. I first saw her six months before the operation which I am about to describe was performed. As she stated that she thought the use of her eyes in reading and in needlework tended to induce the attacks she was examined at St. Thomas's Hospital by Mr. J. H. Fisher, who diagnosed slight hypertrophic astigmatism and ordered her appropriate glasses which she wore until a fortnight before the operation. She, however, stated that the use of these glasses made no difference as to the frequency of her attacks. The attacks were heralded in usually by increased tinnitus which not infrequently came on while she was lying down. The tinnitus persisted after the sickness and vertigo had ceased. She was unable to state that objects took any particular course during the attacks or that she felt any tendency to fall in any particular direction.

During the six months in which she may be considered to have been under my treatment she was for some time given a drachm of quinine daily in three doses, each dose being administered with a drachm of hydrobromic acid. She also took iodide, strychnine, belladonna, and mercury; yet during this time not only did she obtain no relief but her attacks increased in frequency, often recurring after an interval of only one day, though for the last two years and more she had never been free from an attack for a period of

[1] A paper read at the Glasgow meeting of the Otological Society of Great Britain, May 21st, 1904.

more than two months. As a last final attempt to obtain relief before having resort to an operation, which at the best could only be based on theory, she was taken into hospital and treated with hypodermic injections of pilocarpine. During these two weeks she had several attacks of vertigo. The examination of the ear gave the following results: Acoumeter in concha. The voice was heard at two feet; a whisper was not heard. Rinne's test with tuning forks C and C^2 gave negative results; C. mastoid, −30 seconds. On testing with tuning forks C and lower notes were not heard. C^1 was heard at 50 seconds; C^2 at 40 seconds; C^3 at 30 seconds; and C^4 2048 at 25 seconds.

On Feb. 16th, 1904, she was anæsthetised and an ordinary radical mastoid operation was performed, with the exception that the innermost portion of the posterior wall was not removed, but the bony opening in the temporal bone was enlarged, forwards, upwards, and backwards. Anteriorly it was extended into the base of the zygomatic process of the temporal bone and postero-superiorly in such a way that the long diameter of the bony wound was from above downwards and forwards. The malleus and incus lying exposed after the removal of the external attic wall were removed. At this period of the operation the burr was substituted for the cutting gouge which had been previously employed. The next step in the operation consisted in exposing the upper and outer surfaces of the external semicircular canal in its whole extent. The antero-external portion of this canal was now followed forwards and inwards until the outer surface of the superior canal was brought into view. The whole of this canal was then removed by cutting it away with a medium-sized burr, leaving only the upper part of the arch or fornix untouched. The posterior rim of the external canal was then followed so as to bring into view the posterior canal which was burred away entirely. A large oval burr was now substituted for the medium-sized one previously used and the upper surface of the external—the only remaining canal—was cut away with the burr until the anterior half of the membranous canal was exposed. This was then removed with a small burr which was afterwards employed to make a medium-sized opening into the vestibule and an attempt was made to clean away the crista acustica at that end of the canal. This completed the operation, at which I was assisted by my colleague Mr. P. Macleod Yearsley. The wound was then swabbed out with Lister's strong solution, a precaution which I considered to be necessary to adopt on account of the impossibility of carrying out our operative procedures under strict antiseptic precautions. The external meatus was divided longitudinally through its posterior wall and the wound was packed and closed by the ordinary methods.

Immediately after the operation the patient suffered very severely from shock which lasted for about an hour. Slight chloroform sickness supervened but this was certainly hardly so much as is commonly the case. For the next 48 hours she lay coiled up on the right side, her thighs flexed on the abdomen and the legs on the thighs, in the position commonly described as that typical of cerebral irritation. During this period her eyes were tightly closed, but beneath the lids one could see that there were erratic movements of the eyeballs, and she resented any attempt to raise the lids, but though the light from the window fell directly on her face she preferred not to have the window darkened. On the third day the wound was dressed and she would open her eyes if asked to do so but preferred to keep them shut. When they were opened the eyeballs were subject to irregular rhythmical movements both upwards and downwards and laterally. On the seventh day she sat up; on the tenth day she was able to walk with assistance for a few steps, and on the fourteenth day she could walk easily from the small room in which she was into that adjoining, a matter of some 15 to 20 yards there and back. She could, however, only turn towards the right or sound side. If she turned to the left she would have fallen over towards the right side. On the sixteenth day she walked downstairs with a little assistance and upstairs without any help. Her symptoms from that time lessened day by day. At the end of four weeks she was able to do everything without any fear of falling. Since the fourth day there had been no movements of the eyes, nor could any optic movements be induced by syringing the wound either with hot or cold lotions. It is now 14 weeks, or slightly over three months, since the operation. There has been no return of vertigo and the patient is enjoying better health than she has done for the last few years.

There are a few points in respect to this case which are worth considering. The first is naturally the indication for operation. That can only be arrived at with anything approaching certainty when one has more than a single case to consider. Those cases which would appear to me to be the most suitable are those in which by a careful examination and after a course of treatment one has proved that the vertigo cannot be controlled, and at the same time that the deafness is sufficiently great to admit of no reasonable hope of alleviation, although, as will be seen when one comes to consider the question of tinnitus, the hearing does not appear to be diminished materially, and, indeed, the reverse was noticed in this case.

The operation itself is one in which the difficulties will be largely due to anatomical irregularities and to the age of the patient. In those skulls in which the middle fossa is at a lower level than the semicircular canals the operation would of necessity be more difficult and tedious. As to age, all patients excepting those who have passed middle age have a dense petrous bone, and the definition of the canals is extremely difficult. With regard to the symptoms following operation, it is impossible to avoid the conclusion that the extreme shock and irregular movements of the eyes were not entirely disconnected with the use of Lister's strong solution, for we are aware that irritation of the canals causes greater movement than simple section, and I would go so far as to say that strong and irritant antiseptics should not be employed. Finally, with regard to the tinnitus and the hearing power. The former was absolutely uninfluenced by the operation, that is to say her tinnitus is as bad as it was before. The hearing power, however, underwent a most extraordinary change. The voice, which had only been heard before the operation at a distance of two feet, was now well heard at five feet. Her bone conduction, which had previously been −30 seconds, was now −25 seconds, but whereas she had heard the C^1 tuning fork, although very badly, before she was unable to detect it by air conduction afterwards.

A CASE EXHIBITING THE ADAMS-STOKES SYNDROME.[1]

BY E. E. LASLETT, M.D. VICT., B.SC. LOND.,
VISITING SURGEON TO THE HULL AND SCULCOATES DISPENSARY.

THE patient who is the subject of this paper is a thin, spare woman, aged 69 years, married, and has had nine children. When young she appears to have had several attacks of hæmatemesis and she has been liable to "bilious" attacks all her life. Apart from these she appears to have enjoyed very fair health and there is no history of rheumatic fever. She has a very large pendulous umbilical hernia, but this seems to have troubled her much less than one would expect, although its weight and position somewhat interfere with her walking. A year ago she had one prolonged fainting attack but otherwise seems to have been free from the ordinary symptoms of heart disease. The urine is light straw-coloured, with a specific gravity of 1010 and no albumin. Occasionally she has to get up at night to pass urine, but this is not constant.

I was first called to see her on the evening of March 11th, 1904. She was lying on the floor semi-conscious, retching and vomiting small quantities of clear watery fluid, and moving her arms about in a wild, jerky way. The pulse was fairly full and slow. I did not count it. Her son told me that she had been much upset the day before by the breaking of an ornament—one of her few treasures I should fancy—and that earlier in the evening she had been much startled by a neighbour's sudden entrance and immediately sank down in a sort of faint. She soon recovered and, regarding it as a simple fainting attack, I advised her to rest in bed till I saw her again. During the early night she had three fainting fits and again in the early part of the morning there was quite a number of attacks in rapid succession. Just after my arrival in the morning she had another seizure during which she was unconscious for about a minute with dilated pupils, grey cyanosis, stertorous breathing, rigidity of the body, and clonic irregular movements of the arms. Recovery of consciousness followed rapidly, indicated by cessation of the stertorous breathing, contraction of the

[1] A paper read before the Hull Medical Society.

pupils, a violent sneeze, and then she opened her eyes and spoke to those around. During the period of unconsciousness I noticed that the pulse at both wrists was quite absent. A minute or two later she had another seizure, apparently brought on like some of the others by the slight excitement of a neighbour's entrance. It was very short, but there was time to note that the pulse was again absent. Sneezing again heralded the return to consciousness. After this attack the pulse was 60.

I saw her again in the early part of the afternoon. There had been several fits in the interval. The pulse was now from 40 to 42 per minute and slightly irregular in time. Sometimes there appeared to be a very small impulse given to the finger immediately after the normal pulse wave. Auscultation confirmed this, for after the second sound a feeble systolic sound was occasionally heard, not followed by a diastolic sound, a sign probably of what may be called an extra systole too feeble to reach the wrist. While I was listening to the heart I noticed that the beats became somewhat rapidly slower and very feeble and almost immediately the respiration became deep and audible, the patient's head fell back, the pupils dilated, the body became rigid, and there was the same grey cyanosis with stertorous breathing. The noisy respiration so interfered with auscultation that I was quite unable to satisfy myself as to whether the heart sounds were audible or not. All other signs of the heart beat had disappeared. At this moment her condition became so alarming that it did not seem permissible to continue the examination. A moment later breathing ceased, the jaw dropped, and she appeared to be dead, but a few seconds later the tongue moved, then the lips, the head turned, the pupils contracted, she sneezed, and immediately opened her eyes and spoke to me. The pulse had now risen to 60. At 9 o'clock in the evening the pulse was slow but slightly variable, the lowest being 36. Generally it was 40. It was not quite regular in time but with a very slow pulse it is not so easy to judge of the intervals as with a quick pulse. There had been five seizures since 1 o'clock. At this time the following was the condition of the heart. The sounds showed that the contractions exactly corresponded with the pulse. The sounds were of moderate intensity and there was a slight systolic murmur heard best towards the aortic area. The right side was dilated with a distinct impulse over the lower end of the sternum. The radial artery was tortuous and somewhat thickened. While I was further examining the pulse I noticed that the beats began to fail and I had time to warn her son that another attack was coming on. A second or two later the pulse failed in both wrists and a severe attack followed. For 45 seconds the pulse was absolutely imperceptible, then a feeble beat appeared, followed by another stronger and another, and consciousness returned. This "staircase effect" was very distinct owing to the slowness of the pulse and was obviously due to the gradual filling of the artery. After this attack the pulse remained slow, being 44 per minute.

During the three following days the patient had eight attacks in all. The pulse remained slow, it being from 48 to 50. On March 16th the pulse was 48. She had had two attacks during the night. On this day I examined the umbilical hernia. Probably this somewhat upset her, for on subsequently listening to the heart after a few moments the sounds became feeble and the beats slower and a typical attack followed, ushered in by a slight pallor of the face. As on a previous occasion the noisy respiration at first prevented my listening for the heart sounds, but as the stertor subsided and when the breathing was practically absent I found that for a period of 12 seconds the heart sounds were quite inaudible. Then feeble sounds appeared distinctly before the pulse reappeared the rate of the beat being at first rather rapid. During the attack the flickering in the jugular vein which at other times was very distinct quite disappeared. Consciousness returned slowly and it was a minute or two before she was able to answer questions. It was the worst and longest attack that I had seen and there was a good deal of mental depression for some little time after.

On March 22nd it was stated that there was a further attack on the afternoon of the 16th but that there had been none since. The pulse had been keeping at about 60, occasionally rather slower. After this date the patient made good progress and was allowed to sit up for a short time on the 29th, but I kept her recumbent for the most part during the next fortnight. The heart has much improved, the beats are quite regular, the systolic murmur is scarcely audible, and there is no impulse over the sternum. The pulse is generally about 60. The treatment consisted of rest, quiet, and medicinally three minims of liquor strychninæ and ten grains of potassium bromide three times daily, which she still continues to take.

There must have been about 30 seizures in all. There has never been pain before any of them. Usually they occurred without any warning but sometimes they were preceded by faintness or occasionally by a peculiar feeling as if someone were pressing on her chest and forcing her down. The urine was never passed during a fit. Consciousness as a rule returned very rapidly and this was the more striking because at the height of the attack the peculiar cyanosis, the widely dilated pupils, the dull cornea, the dropped jaw, and the cessation of breathing would lead almost anyone seeing the condition for the first time to say that the patient was dead.

Dr. Percy Kidd has recently published a clinical lecture on a case of Adams-Stokes disease.[2] In this lecture he fully reviewed the literature and it is not therefore necessary for me to enter into this part of the subject except to mention one or two points which have a special bearing on the present case. Dr. Kidd's case is in many respects similar to my own. The patient was a woman, aged 58 years, whose pulse on admission varied from 25 to 28. In two fits observed in the hospital the pulse was absent for 40 seconds and 90 seconds respectively. The heart was not examined during a fit. The patient improved and at the time of publication had not had an attack for over two months.

Apparently the complete absence of the pulse during the seizure had not been noted previously to Dr. Kidd's case. What is the actual condition of the heart during the fit? As previously stated on one occasion in my case the heart sounds were inaudible for 12 seconds, and it is not improbable that they would have been inaudible almost from the beginning of the attack. On this subject Clifford Allbutt writes[3]: "Very feeble heart beats may be inaudible even to the stethoscope. Fibrillary contraction is sometimes recovered from in animals, probably not in man." Several writers have suggested that the slowing of the heart in these cases is due to the action of the vagus inhibitory mechanism. We must suppose either that the inhibitory mechanism is in an abnormal condition of irritability or else that the heart muscle itself is for some reason peculiarly sensitive to its influence. It is important here to emphasise the very marked influence of emotion on the onset of the fits in my case as suggesting one way in which the inhibitory mechanism may be brought into play. If, now, the slowing of the heart in these cases be really due to vagus action it is not impossible that at a further stage the heart may be brought to an absolute standstill. So far as is known the simple action of the vagus cannot bring the heart to a final arrest.[4] In prolonged experimental stimulation of the vagus after a time the heart "escapes" and resumes its beat.[5] If, on the contrary, the cessation of the beat be due not to vagus inhibition but to intrinsic events everything almost is unfavourable for recovery.[6] In any case it would be difficult to decide this interesting question, because the heart cannot be inspected as in an experiment upon an animal, but at least it is certain that an absolute stop for 12 seconds or more could be due only to the action of the vagus. Under any other condition recovery could not possibly take place after such a lengthy pause.

Hull.

[2] THE LANCET, Feb. 13th, 1904, p. 411.
[3] System of Medicine, vol. v., p. 835.
[4] Foster: Text-book of Physiology, vol. i., p. 370.
[5] Waller: Physiology, p. 102.
[6] Foster: Loc. cit.

BRITISH MEDICAL TEMPERANCE ASSOCIATION.—The twenty-eighth annual meeting of this association was held on May 26th at the London Temperance Hospital. Professor G. Sims Woodhead presided. The report showed that there had been 33 new members (abstaining registered practitioners) enrolled during the year and that there were now 568 members and 298 student associates. After the business meeting a conversazione was held at which short addresses were given by Professor Sims Woodhead and Mr. A. Pearce Gould, one of the vice-presidents. Mr. W. Chataway exhibited some magnificent natural colour photographs with the aid of an electric lantern.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

NOTE ON THE LYMPHATIC GLANDS IN SLEEPING SICKNESS.[1]

BY E. D. W. GREIG, M.B., C.M. EDIN.,
CAPTAIN, I.M.S.,
AND
A. C. H. GRAY, M.B. LOND., M.R.C.S. ENG., L.R.C.P. LOND.,
LIEUTENANT, R.A.M.C.

FOLLOWING a suggestion of Dr. F. W. Mott we have examined the contents of lymphatic glands during life from 15 sleeping sickness patients. In all of them actively motile trypanosomes were very readily found in cover-glass preparations taken from the cervical glands. They were also present in other glands, such as the femoral, but were not nearly so numerous. We found the trypanosomes to be far more numerous in the glands than in the blood or cerebro-spinal fluid and we believe that the examination of fluid removed from lymphatic glands will prove to be a much more rapid and satisfactory method of diagnosing early cases of sleeping sickness than the examination of the blood.

At first the glands were excised but this was soon found to be unnecessary, as it is easy to puncture a superficial gland with a hypodermic syringe and to suck up some of the juice into the needle and to blow this out on a slide. The actively moving trypanosomes were readily found after a short search in these slides, when a prolonged search in similar preparations of the blood from the finger failed to discover them. In stained specimens, in addition to well-formed trypanosomes, there exist many broken-down remains which suggests that a destruction of the trypanosomes takes place in the glands. We also examined the cervical lymphatic glands of the five natives suffering from trypanosomiasis who have been under observation for the past year and found actively motile trypanosomes in the liquid withdrawn from the glands in all of them. One of these patients is employed in the hospital and the dispenser reports that he is getting very stupid. The lymphatic glands were also examined for streptococci by staining and culture, but in every case were found to be sterile. Some of the cases, the glands from which were examined for streptococci, were very far advanced. The streptococcus invasion must, in our opinion, be a very late one and only occur shortly before death. Observations made upon the blood show a constant increase in the percentage of lymphocytes but the total leucocytes are not increased.

We consider that these observations throw a new light upon the glandular enlargements which have been so constantly noticed in sleeping sickness and that the disease is essentially a polyadenitis brought about by the arrest of the trypanosomes in the glands where many of them are destroyed, but whence some escape from time to time into the blood stream and thus occasion the increase which has been observed in the peripheral circulation. We regard our observations upon the presence of trypanosomes in number in the lymphatic glands of both early cases of trypanosomiasis and advanced cases of sleeping sickness as affording important evidence of the unity of these diseases and further proof that the trypanosomes are the essential cause of sleeping sickness.

[1] Read before the Royal Society on May 5th, 1904.

NOTE ON A CASE OF HYDROA DURING PREGNANCY WITH RECURRENCE AT THE MENSTRUAL PERIODS.

BY C. A. DOUGLAS BRYAN, M.R.C.S. ENG., L.R.C.P. LOND.

THE notes of the following case are interesting in that they describe a rare condition with a still rarer complication.

The patient, who was a married woman, came to see me on Sept. 1st, 1903, concerning a rash that had appeared during the previous week on her arms, thighs, and trunk, more especially on her arms; she was at the time about five and a half months pregnant. The rash on the arms was vesicular, very painful, and irritating; the vesicles were continually bursting, while fresh crops kept appearing; the fluid from the vesicles gave a scalding sensation to the arms. The rash on the thighs and trunk was papular only and very irritating. The diagnosis of hydroa gravidarum was made. Various remedies were tried locally, such as lead, resinol, and thiol, and arsenic was given internally. Thiol (used as an ointment and dusting powder) gave most relief. The irritation and pain were at times so great that opium had to be administered and serious thoughts were entertained of inducing premature labour. About Sept. 29th the fœtus died. The rash had by this time extended in its papular form to the face. Labour soon after this set in and the woman was delivered on Oct. 9th of a stillborn fœtus. The rash now for the most part soon disappeared, except for some slight irritation about the arms. The patient's recovery from the confinement was hindered by the development of pleurisy with effusion on the seventh day; this eventually cleared up satisfactorily. The catamenia commenced about a month after delivery and have continued regularly every month up to the present. At each menstrual period the arms swelled slightly, small spots appeared, and there were irritation and slight pain; this cleared up between the periods. For the last two months she has been free from the rash, &c. As to the causation of the disease nothing could be made out. The patient had had four children at full time and a serious abortion one and a half years ago; she had never before had any skin eruption and had enjoyed average good health. During this last pregnancy, up to the appearance of the rash, she had been remarkably well, and while the rash was in evidence her health did not suffer beyond the fact of the want of sleep. The urine on examination was found to be normal.

The internal administration of arsenic did not seem to have any influence whatever on the course of the disease. The local applications were far from satisfactory, though, as I have mentioned above, thiol gave slight relief. The other point of interest in the case was the recurrence of some of the symptoms at the subsequent menstrual epochs. So far as I am aware this latter condition has never before been observed. I should be glad to hear of any other cases, the line of treatment pursued, and with what results.

Leicester.

A Mirror
OF
HOSPITAL PRACTICE,
BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv., Proœmium.

ST. BARTHOLOMEW'S HOSPITAL.

A CASE OF VERTIGO DUE TO LABYRINTHINE CARIES; OPERATION ON THE LABYRINTH; COMPLETE RECOVERY.

(Under the care of Mr. A. E. CUMBERBATCH and Mr. C. ERNEST WEST.)

THE patient, a woman, aged 22 years, first came under treatment at St. Bartholomew's Hospital about the beginning of April, 1903, complaining of pain in, and discharge from, the right ear. After some weeks of treatment as an out-patient she was admitted on account of persistent headache and tenderness over the upper part of the right mastoid. Under Mr. Cumberbatch's supervision a typical post-aural operation was performed and she made a good recovery. At the time of her discharge she complained of some slight giddiness and on August 4th she was readmitted with headache, muscular weakness, and marked ataxic gait. There was nothing to remark about the operation cavity which was healthy but incompletely "scarred." The temperature was normal and the pulse was 80. The right mastoid region and the area above it were tender and painful. When attempting to walk she immediately drifted to the right and

if not supported fell to this side after a few steps. Her track strikingly resembled that of a sheep with a cerebellar cyst. On sitting up in bed she also fell to her right side. There were no ocular symptoms. The knee-jerks were equal and active. No clonus was present at the knee or the ankle. There were continual fibrillar twitchings of the right arm and leg and distinct weakness of the right grip. At this stage Mr. Cumberbatch left London on his summer holiday and Mr. West was left on duty for him. Mr. Cumberbatch's opinion was that the symptoms were due to caries affecting the labyrinth.

During the next ten days the headache continued and the pulse grew slower, sinking once to 64. There was no mental dulness but much lassitude. On August 14th a loose sequestrum of somewhat pyramidal form was removed by forceps. Its base formed a part of the upper and anterior portion of the inner tympanic wall and its apex passed inwards above the cochlear region. On the 17th she was sick once. The temperature was 96·6° F. and the pulse was 60. There was slight haziness of the right optic disc. Her condition was stationary until the 25th and the presence of a cerebellar abscess was considered probable. With the knowledge that carious processes were present and to exclude extradural causes a very wide operation was performed on this day through the old mastoid scar. The cavity was enlarged upwards and backwards, the tegmen was freely cut away, and the lateral sinus and the dura mater in its neighbourhood were exposed. The dura mater was found normal in both regions. A further sequestrum was removed from the cochlear region. The patient made an excellent recovery, the pain and tenderness diminished, and the giddiness for the time almost disappeared. The whole cavity rapidly became covered with epithelium and dry with the exception of one small moist patch in the region of the promontory. The right ear was quite deaf. Early in October she had some return of pain and again became very giddy and this condition remained and grew slowly worse through the autumn and winter. During all this time she was carefully watched. The moist patch persisted but all the upper and posterior part of the cavity was dry, smooth, and shining.

On April 11th, 1904, she was again admitted. Her giddiness was very severe and a small fresh granulating area had appeared in the region of the external semicircular canal. Mr. Cumberbatch very kindly allowed Mr. West to consider the case as his own as he had previously operated on it in his absence.

On April 12th, after disinfecting the cavity so far as possible, Mr. West made an extended incision through the old scar and turned the auricle freely forward. The region of the outer limb of the external semicircular canal was found carious and scraping left a hollow there of about the size of half a large pea. This was then enlarged by the burr upwards to the dura mater and forwards above the level of the facial aqueduct until the outer limb of the superior semicircular canal must have been cut away and the bone was everywhere of ivory hardness. There was no facial twitching. Attention was now turned to the tympanum. A cavity was opened anteriorly in the cochlear region and this was extended by cutting away its walls with a small sharp spoon until there appeared a smooth deep hollow occupying the entire region of the cochlea and vestibule. Working backwards and upwards finally produced one sharp facial twitch and it was decided to go no further. Between the cavity above and the cavity below there remained a narrow prominent bony ridge which must have contained the facial canal. The wound was completely closed behind the ear and the cavity was lightly plugged from in front.

Convalescence was somewhat delayed by a slight suppuration in the upper end of the wound. There was no facial paralysis. The temperature continued to make small daily excursions until April 19th when it finally sank to normal. From the day after the operation the patient noticed the complete disappearance of her giddiness which had previously annoyed her even when in bed. On the 26th she was walking about the ward. On May 3rd the cavity was rapidly becoming covered with epithelium She could now stand with her heels together and eyes shut without swaying, and has since continued entirely free from vertigo.

Remarks by Mr. WEST.—The above case is of interest from the persistence and severity of the vertigo, the difficulties which occurred in identifying its cause, and the marked success which finally resulted from a determined attack on the labyrinth. Obviously as long ago as August, 1903, the patient's cochlea was invaded by caries and functionally destroyed. For seven months afterwards she suffered from continued irritation of her vestibular nerve. In the earlier part of this time it was hoped that this was due to scarring after past changes and would subside. No improvement took place, however; rather her vertigo increased and, as was made evident at the last operation, there had continued a slowly progressive caries. In view of the obstinacy of the trouble a systematic effort was made to destroy as much of the labyrinth as was accessible and to drain any remainder so thoroughly as to do away permanently with its functional activity. The main risk of such an operation is to the facial nerve which lies in its tympanic part between the region of the canals and that of the cochlea and vestibule and can only have a narrow bar of bone left to support it between the two. With adequate opening up of the cochlea and vestibule the risk of leptomeningitis by extension through the internal auditory meatus is probably small.

Medical Societies.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY.

On the Elasticity of the Aorta, being a Contribution to the Study of Arterial Sclerosis.

A MEETING of this society was held on May 31st, Sir R. DOUGLAS POWELL, Bart., the President, being in the chair.

Dr. W. P. HERRINGHAM and Dr. W. A. WILLS communicated a paper on the Elasticity of the Aorta, being a Contribution to the Study of Arterial Sclerosis. They said that they had examined a large number of aortas and had found that after extension they all recoiled to their original length but that the degree to which they stretched varied greatly. It was to the consideration of this latter point that their paper was devoted. Having referred to, and analysed, the work of previous authors they proceeded to describe the instrument which they had used for the purpose of their investigations. It consisted of a lever of the first order with a long arm on which travelled a weight. At the end of the arm was a pen which wrote on a flat board travelling at the same rate as the weight with the result that a curve was formed the abscisse of which recorded the weight and the ordinates the degree of elasticity of the aorta. The instrument was founded on that invented by Roy. The material used comprised 100 male and 28 female aortas; the latter were less elastic or extensible than the former but in other respects obeyed the same laws and were not referred to in detail. The 100 cases were almost equally distributed between the third, fourth, fifth, sixth, and seventh decades of life and in each case the age, the width and condition of the aorta, the weight and condition of the heart, the fatal and coincident diseases were recorded, and the condition of elasticity as shown by the curve was measured under pressures of 50, 100, 150, and 200 grammes. After describing the histological changes in detail Dr. Herringham and Dr. Wills summarised their conclusions as follows: (1) the aorta follows the law laid down by Wertheim for the elasticity of organic bodies; (2) its width increases with age as the result of internal pressure exercised upon it by the natural forces of the circulation; (3) the more it thus becomes dilated the less is it capable of being further stretched; (4) when stretched by weights up to 200 grammes aortas, even when dilated, retain the power of returning to their original volume; (5) no simple mathematical relation obtains between dilatation and loss of elasticity; (6) elasticity depends chiefly upon the tunica media and the loss of it chiefly on changes in the same coat; (7) these changes do not lie in the muscular tissue; (8) the amount of muscular tissue, though varying in individuals, probably, except in rare cases, remains the same in each individual throughout adult life; (9) the tunica media increases in substance with age; (10) this increase is to be ascribed to the elastic or to the structureless connective tissue or to both; (11) it is to changes in these latter tissues that the loss of elasticity is to be ascribed; and (12) the

histological alterations other than simple increase are not sufficient to account for this loss.

Professor T. CLIFFORD ALLBUTT congratulated Dr. Herringham and Dr. Wills on their application to medicine of a graphic method which seemed calculated to give precise results. Clinical medicine year after year rested in obscurity because of the difficulty of bringing methods of precision to bear upon its problems. Personally he was much interested in the research, as he had been informally associated with the late Professor Roy in a similar investigation. Roy's results were, however, supposed to have been to some extent invalidated by Professor T. A. McWilliam's demonstration of the post-mortem contraction which continued even for a week after death in the aorta as well as in more muscular vessels. He would be glad to know how this contraction was dealt with by Dr. Herringham and Dr. Wills. He was interested to note that, so far, his own opinions were corroborated that in a large class of arterial disease the latter was not primary but consequential to high blood pressures. He hoped that the elongation of arteries under high blood pressures would also be estimated and that the question would be answered as to whether such elongation would result appreciably if vasomotor contraction persisted for long periods. Dr. Gutch had demonstrated that muscular compensation in the heart and arteries was not by numerical increase of fibres and to test this in the aorta was, in his opinion, an ingenious device. He trusted that the chemical investigations would be carried on as promised. Two of his own graduates were engaged at present in incinerating lengths of artery from various parts and at various ages to ascertain if, in arteries not obviously diseased, the mineral constituents undergo any definite and regular increase as life advances.

Dr. A. G. AULD said that in the course of some investigations conducted by the late Professor T. Coates and himself they had satisfied themselves that in some cases the elastic laminæ underwent a granular degeneration confined to the smallest fibres. He thought it possible that some functional loss might account for the diminution of elasticity and that it would be remarkable if an organ possessing so much elastic tissue did not depend on the integrity of the latter for its extensibility. Another factor in the causation of loss of elasticity was the increase in the mass of connective tissue allowing less play for the elastic fibres.

Dr. A. MORISON preferred the term "submuscular coat" for denoting the tunica media and although he had also observed granular degeneration in the elastic fibres he agreed with Dr. Herringham and Dr. Wills that the loss of elasticity depended more on the increase of bulk of the connective tissue. He considered that along with loss of elasticity and increase of submuscular tissue there was also some muscular hypertrophy.

Dr. W. FINLAY hoped that Dr. Herringham and Dr. Wills would be able to investigate arteries of patients the subjects of syphilis and alcoholic excess.

Dr. SEYMOUR TAYLOR asked whether Dr. Herringham and Dr. Wills could extend their investigations to arteries which were naturally tortuous. He had been in the habit of teaching that arteries were tortuous not as the result of shock but on account of their situation in moveable tissues. It would be interesting to compare the elasticity of the splenic artery, which was naturally tortuous, with that of the radial, which was naturally straight.

Dr. HERRINGHAM replied.

CLINICAL SOCIETY OF LONDON.

A Case of Pyo-pneumothorax treated by Resection of Ribs.—Two cases of Tumour of the Left Auricle simulating Mitral Stenosis.—Election of Officers.

THE annual meeting of this society was held on May 27th, Dr. FREDERICK TAYLOR, the President, being in the chair.

Professor D. W. FINLAY read the notes of a case of Pyo-pneumothorax treated by Incision and Removal of Ribs. The patient was a boy, aged 17 years, admitted into the Aberdeen Royal Infirmary suffering from tuberculous pneumothorax on the left side, the apex of the right lung showing the ordinary signs of tuberculosis. Effusion was present, at first serous but later becoming purulent. After a preliminary tapping, free incision and removal of portions of two ribs were practised and a large quantity of pus was evacuated. On two occasions subsequently considerable portions of the fifth, sixth, seventh, and eighth ribs were resected and the boy was treated for many months in the open air on the balcony of the ward. The result had been that a fair measure of health was regained whereby he was enabled to resume his occupation. But there were still a discharging sinus and a cavity of the capacity of one and a half ounces, the daily discharge of pus being about a drachm. The tuberculous process at the right apex had been completely arrested but for some time the urine had contained albumin, suggesting the necessity for further operative procedure. The view was put forward that the radical treatment of such cases, as in cases of ordinary empyema, offered a fairer prospect of benefit than the practice hitherto generally adopted of leaving the fluid alone or of removing it by repeated tappings, having regard more especially to recent improvements in the mode of treatment of pulmonary tuberculosis. Two other cases were referred to in which free evacuation of pus was practised. In one of these the patient seemed to be neither better nor worse for the operation; in the other such an improvement was obtained that he was able to return to his employment.—The PRESIDENT congratulated Professor Finlay on the successful issue of his case and thought that the course pursued was a wise one.—Dr. J. P. PARKINSON thought that the argument for operation in these cases was not very strong. He had always been much struck by the opinion advanced by the late Dr. Fagge who had related several cases of recovery from pyo-pneumothorax without operation. He rather questioned whether it was worth while going through such a great deal in order to obtain comparatively little benefit.—Dr. PERCY KIDD considered that medical practitioners were apt to be influenced unduly by the older methods of treatment without surgical interference. The difficulty was in many cases, apart from the surgical aspect, to decide exactly how much disease was present.—Professor FINLAY replied.

Dr. H. T. THOMPSON and Dr. C. U. AITCHISON (introduced by Dr. KIDD) communicated a paper upon two cases of Tumour of the Left Auricle simulating Mitral Stenosis. The first case occurred in a girl, aged 15 years, who was under the care of Dr. Kidd in the London Hospital, into which she had been admitted for pains in the chest and dyspnœa. She had had good health until 12 months before admission, when pain and shortness of breath appeared, afterwards followed by occasional vomiting and œdema of the legs. There was no history of rheumatism or chorea. On examination the heart was enlarged and presystolic and systolic murmurs were heard at the apex. The liver was enlarged and tender. The case was considered to be one of mitral stenosis and was treated accordingly. An attack of thrombosis of the left subclavian vein occurred two months after admission, followed by symptoms of obstruction in the right dorsalis pedis artery. Six months later the patient died from subacute nephritis. The presystolic murmur disappeared towards the last. At the necropsy a pedunculated tumour was found hanging from the auricular septum and protruding between the curtains of the mitral valve. Microscopically it was a fibroma. The second case was that of a woman, aged 51 years, under the care of Dr. Francis Warner. She had suffered from dyspnœa for five years. The heart was much enlarged and a presystolic and a systolic murmur were heard at the apex. Ascites and albuminuria were present. A week after admission to hospital she was seized with a right-sided hemiplegia and died. At the necropsy a rounded mass was found attached to the auricular septum in the situation of the fossa ovalis which microscopically consisted of myxomatous tissue. Several cases had been recorded, some of which showed how tolerant the heart was of these tumours. Dr. Léon Berthensen regarded the following points as suggestive of an intracardiac tumour: (1) absence of the rheumatic history and evidences of progressive endocarditis; and (2) signs of cardiac failure, together with embolic symptoms. A well-marked presystolic murmur had been observed in a case reported by Sir W. T. Gairdner in which a fibroma of the right auricle was found at the necropsy.—Dr. WILLIAM PASTEUR, while remarking upon the rarity of the condition, referred to a case under the care of Dr. J. Kingston Fowler which was reported at the Pathological Society of London in 1893. A large pedunculated clot was found in the left auricle attached close to the foramen ovale which was the most

common situation for these tumours.—Dr. C. W. CHAPMAN inquired whether the vomiting was likely to be accounted for by the condition of the kidneys.—Dr. WILLIAM EWART described a similar case in which he had diagnosed mitral stenosis during life and in which a pedunculated clot was found post mortem in the left auricle which was capable of causing an intermittent blocking action of the mitral valve.—Dr. PARKINSON referred to a specimen that he had exhibited before the Society for the Study of Disease in Children in which there were three organised thrombi situated in the right auricle, one of them being pedunculated.

Mr. STEPHEN PAGET exhibited a case of Osteitis Deformans.

The report of the council and the treasurer's statement of accounts were presented and the following gentlemen were elected to hold office for the year 1903-4:—President: Dr. Frederick Taylor. Vice-Presidents: Sir William R Gowers, Dr. F. de Havilland Hall, Dr. J. Kingston Fowler, Mr. Henry Morris, Mr. C. H. Golding-Bird, and Mr. H. T. Butlin. Treasurer: Mr. G. H Makins. Council: Dr. F. E. Batten, Dr. Harry Campbell, Dr. J. Walter Carr, Dr. W. S. Colman, Dr. Norman Dalton, Dr. W. Lee Dickinson, Dr. E. W. Goodall, Dr. F. H. Hawkins, Dr. Percy Kidd, Dr. Hector W. G. Mackenzie, Mr. F. W. Strugnell, Mr. Herbert W. Allingham, Mr. Anthony A Bowlby, Mr. Walter Edmunds, Sir Alfred D. Fripp, Mr. J. Hutchinson, jun., Mr. T. H. Kellock, Mr. B. G. A. Moynihan, Mr. C. S. Wallace, and Mr. F. C. Wallis. Honorary secretaries: Dr. William Pasteur and Mr. W. G. Spencer.

GLASGOW OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.—A meeting of this society was held on May 25th, Dr. J. Nigel Stark, the President, being in the chair.—Dr. J. K. Kelly showed two specimens of Extra-uterine Pregnancy.—Dr. Miller showed (for Mr. J. Stuart Nairne: 1. A Tube and Ovary enveloped in Adhesions. The tube contained a blood clot but there was no evidence of a pregnancy. 2. A Hydrosalpinx.—Dr. J. M. Munro Kerr read notes of a case of Spontaneous Rupture of the Uterus during Pregnancy through the cicatrix of a Cæsarean section wound. The patient, a tertipara, was admitted to the Glasgow Maternity Hospital on Oct. 28th, 1901. In both the previous labours the children were dead. On the last occasion craniotomy was done. On this occasion Dr. Kerr performed Cæsarean section, employing Fritsch's fundal incision. The patient made a good recovery. On her second admission she was judged to be in her thirtieth week. After an enema given about midnight she complained of pain in the epigastrium but shortly afterwards fell asleep. Next morning the pain had spread over the whole abdomen but there was no vomiting and the pulse was not accelerated. Later in the day tenderness became more marked, the pulse rose to 90, the temperature became subnormal, and the breathing more rapid. The patient lay with her feet slightly drawn up and on palpation the fœtal parts could be made out with great readiness. There was some blood-stained vaginal discharge. Laparotomy was performed on the same day. On the abdomen being opened a large quantity of dark-coloured blood escaped and the intact membranes and placenta with the inclosed fœtus presented. The uterus lay retracted behind and was found to have a transverse rupture through the cicatrix of the previous Cæsarean section. The uterus was removed by supravaginal hysterectomy. The patient was dismissed well a month after the operation.—Professor Murdoch Cameron read notes of a case of Large Mesenteric Cyst. The patient, aged 32 years, was admitted to the Western Infirmary on Sept. 26th, 1903, with the history of swelling of the abdomen of 12 years' duration. The swelling had given no trouble until a fortnight previously to admission when she had an attack of severe pain in the region of the umbilicus. Fluctuation was very distinct but no nodules could be made out. Examination per vaginam was negative. On the 29th abdominal section was performed and 33 pints of thin, greenish-yellow fluid were evacuated. The cyst was very thick-walled and adherent over the whole surface. It seemed to be entirely encircled by omentum. The ovaries were quite healthy. The patient made a good recovery. The fluid from the cyst was slightly alkaline and of specific gravity 1011. It contained considerable numbers of exceedingly fatty leucocytes and larger cells resembling endothelial cells. Free fat globules were also present as well as a small number of red blood corpuscles. The fluid also contained a small amount of albumin. The cyst was practically unilocular, although partial septa existed.—Dr. Lindsay and Dr. Taylor related a case of Diaphragmatic Hernia in a Seven Months Fœtus. 12 months previously the mother had given birth to an eight months child. The medical man in attendance stated that the heart was beating on the right side. This was also the case with the specimen shown. In the present case the right half of the diaphragm was complete. There was a large round opening in the left half of the diaphragm. The stomach, duodenum, most of the small intestine, cæcum and appendix, ascending and transverse colon, spleen, and the left lobe of the liver were thrust through the diaphragmatic opening into the thorax, carrying before them the pleura and the peritoneum which together formed a complete hernial sac. The left lung was crowded into the upper part of the thorax. The heart and pericardium were normal except that the apex of the heart lay to the right of the middle line.

WINDSOR AND DISTRICT MEDICAL SOCIETY.—A meeting of this society was held at the Guildhall, Windsor, on May 25th, Mr. W. B. Holderness, the President, being in the chair.—Microscopical preparations were exhibited illustrative of Carcinoma of the Breast, Carcinoma of the Stomach, Trichiniasis, Splenic Leukæmia, and Chondrosarcoma of the Parotid Gland.—The time of the meeting was mainly occupied by the examination and discussion of the cases exhibited. These consisted of a typical case of Exophthalmic Goitre in a young woman shown by the President.—Dr. W. F. Lloyd showed a young child with a Congenital Malformation of the Toes. There were undue mobility of the metatarso-phalangeal joints and considerable inward displacement of the hallux when the foot touched the ground.—Dr. G. E. Hale showed a male patient with High Myopia and considerable Pigmentary Choroiditis. The latter was thought to be specific in origin.—Dr. C. R Elgood showed (1) a man, aged 39 years, presenting well-marked symptoms of Locomotor Ataxy; and (2) a boy, aged ten years, with Wasting of the Muscles of the Right Upper Limb. There was the history of an injury. The case was judged to be one of subacute anterior poliomyelitis.—Mr. J. H. Tomlinson exhibited and demonstrated the use of an instrument which consisted of a simplified form of Abney's Colour Patch Apparatus adapted for the consulting room.—A vote of thanks to Mr. Tomlinson for his interesting demonstration terminated the proceedings.

BRITISH ELECTRO-THERAPEUTIC SOCIETY.—A meeting of this society was held on May 27th, Dr. Lewis Jones, the President, being in the chair.—Dr. G. H. Graham showed a young woman, aged 22 years, with the following Deformity: the left humerus with its head measured only two inches and there was absence of the left radius, three carpal bones, two metacarpals, the phalanges of the thumb, and two fingers. The skiagraph was shown which clearly indicated the absence of the above-mentioned parts.—Dr. A. W. Sikes read notes of a case of Persistent Sinus of the Abdomen after Appendicitis (non-tuberculous) which had resisted all forms of treatment but which had yielded to the local administration of high-frequency currents with a probe electrode.—Dr. H. Manders read a paper on the Choice of Method in the Therapeutics of High-frequency Treatment. The paper dealt chiefly with the physical aspect of the subject and methods of effluvation and derivation. Several members took part in the discussion which ensued.

KIDDERMINSTER MEDICAL SOCIETY.—A meeting of this society was held on May 27th, Mr. W. Hodgson Moore, the President, being in the chair.—Mr. J. Lionel Stretton showed a woman upon whom he had performed the operation of Gastro-jejunostomy on March 26th, 1903, the approximation being accomplished by means of a Murphy's button which was not passed until April 10th, 1904, more than 12 months after the operation. The patient was now well and free from discomfort. He also showed a Dermoid Cyst.—Dr. J. Brocket showed a Cæcum which had perforated owing to an annular stricture in the sigmoid region. The case had presented no urgent symptoms until after the perforation had occurred. He also showed two greatly contracted Granular Kidneys removed from a man who died from suppression of urine; previously to his death he passed no urine for seven days. He became comatose a few hours before death.—Mr. A. C. Oldham read an interesting paper on Moveable Kidney.

Reviews and Notices of Books.

Religion and Science: Some Suggestions for the Study of the Relations between them. By P. N. WAGGETT, M.A., of the Society of S. John the Evangelist. London: Longmans, Green, and Co. 1904. Pp. 174. Price 2*s.* 6*d.* net.

This work is one of a series of handbooks for the clergy edited by Arthur W. Robinson, vicar of All Hallows, and the fact that one of these handbooks should be devoted to the study of the relations between religion and science marks the growth of a broader spirit of inquiry amongst the religious teachers of the day. Many regard religion and science as antagonistic, this view being perhaps fostered by imperfect knowledge or indifference on either side. Religion is often understood to be a question of unreasoning faith, while science is thought to be influenced solely by a spirit of sceptical inquiry. Each has suffered from lack of sympathy with the aims and methods of the other, and when we meet with such thoughtful and sympathetic work as we find in this little volume it is a pleasure to examine it carefully and to ascertain how far it succeeds in showing the bearing of natural science upon religious faith and practice.

Father Waggett has approached this very difficult subject with a mind open to all aspects of religion and scientific truth; he has studied evolution and biology with full knowledge of the difficulties which must arise when it is so much easier to raise questions than to provide answers. Since members of the clerical profession have realised that scientific doctrine is complicated and hard to master they have, as a rule, neglected the study of science or have been content with a "moderately laborious research." Father Waggett rightly warns his readers, that is, the clergy, that few things are so perilous as knowledge lightly won. He maintains that a discussion of the scientific criticism of religion is valuable in proportion to the knowledge of science and of religion of the parties to the discussion: those who know most will be slowest to claim competent or satisfactory knowledge in either field. The author deplores the present relation between science and religion, which he regards not as a truce between two opposing camps but as a state of indifference, in which each side considers itself immune to the poisons of the other's doubts and remains untouched by the splendours of the other's truths. Each is content to work independently and to refrain from criticising the statements of the other. The author regrets this apathy and would gladly exchange it for a return to weekly conflicts on the narrowest issues, fought on the narrowest lines, rather than see a perpetuation of the present cold separation between the great thinkers of the day. He argues that working hypotheses may be compared to the use of an alloy; they may be necessary before a scientific truth can be grasped, but he regards truth as pure gold, the alloy as the convenient addition which enables the workman to perform his part. The theory of natural selection is instanced as a possible "alloy" which, even if abandoned, will be found to have advanced the great truth of development. On the proper appreciation of the theories of natural selection, evolution, and heredity Father Waggett's remarks are extremely suggestive; he holds that these theories are not opposed to revealed religion and indicates that each in turn presents difficulties which cannot be solved with existing scientific data. He thinks that the doctrine of heredity has been twisted to involve the futility of personal effort. He boldly admits that efforts to conciliate religion and science must frequently fail and that there must always be a clash of opposing beliefs, but he takes comfort in the thought that life is essentially composed of a resistance to certain forces and must cease when the struggle comes to an end. To attempt to secure peace by restating religion in scientific terms, or by relegating material evidence to a secondary place by the assertion of the idealism of religion, fails to satisfy. The conclusion that is reached is that religion requires faith, obedience, and hope transcending the evidence of the senses, and that the doubting spirit can receive no comfort nor can religion be served by the fact that the existence of a Great First Cause can be proved as men prove the existence of an Ice Age. He believes that, though in the past religion and science have been hindered by the supposed conflict between them, yet in the future each may serve the other and that the true cure for religious doubts will be found in the scientific treatment and pursuit of religion itself.

We have endeavoured to show the general scope and aim of this little handbook and we think Father Waggett is right in considering that "it raises more questions than it settles." It is a thoughtful attempt to stimulate inquiry and if occasionally the argument is so condensed that it requires careful and close reading and thinking this result has probably been desired by the author. It might have been easier to the author to treat the subject superficially but the educational value of the book would not have been so great.

Scientific Memoirs by Officers of the Medical and Sanitary Departments of the Government of India: A Preliminary Report on a Parasite found in Persons suffering from Enlargement of the Spleen in India. By Lieutenant S. R. CHRISTOPHERS, M.B. Vict., I.M.S. New series. No. 8. Calcutta: Office of the Superintendent of Government Printing, India. 1904. Pp. 17. Price 1 rupee, 8 annas.

LIEUTENANT CHRISTOPHERS, already well known by his previous good work on malaria, was directed by the Government of India to proceed to Madras and to investigate the nature of parasites that had been discovered there by Captain C. Donovan, I.M.S., in enlargement of the spleen. The history of this discovery is as follows. In 1900 Major W. B. Leishman, R.A.M.C., the present Professor of Pathology at the Royal Army Medical College, discovered these particular parasites during the examination of a film taken post mortem from the spleen of a case of fever contracted in Dum-Dum. He described them in a paper in May, 1903. The constant presence of chromatin masses found in the bodies suggested to Major Leishman that the latter might possibly be the remains of trypanosomata and that similar cases of so-called malarial fever might in reality be cases of trypanosomiasis. In July, 1903, Captain Donovan found similar bodies in blood taken from cases by splenic puncture during life. He, however, considered them to be a new form of parasite, as he failed to find trypanosomata in the blood. Specimens were sent to Major R. Ross, to Professor Laveran, and to Professor Mesnil. Major Ross also came to the conclusion that they were a new form of parasite and proposed to call it Leishmania Donovani. In 1904 Professor Marchand and Dr. Ledingham found similar bodies in the spleen, the liver, and the bone marrow. Professor Laveran and Professor Mesnil in the meantime having examined the specimens sent to them concluded that the parasite was a new species of piroplasma and named it the piroplasma Donovani. Such was the position of affairs when Lieutenant Christophers's investigation was made. He examined many cases in Madras and the tissues at three necropsies, and in addition compared the human parasites with those of two species of piroplasmata, one in the calf and the other in a pariah dog.

The report details the clinical features of the cases in which the parasites were found; their post-mortem appearances; the relation of the disease to kala-azar; the description of the parasite and its distribution in the body; the comparison of the parasite with a species of piroplasma; and, lastly, the nature of the so-called "zooglea

mass." As regards the clinical features of cases these were found to consist in great enlargement of the spleen, emaciation, irregular pyrexia, and certain abdominal symptoms such as diarrhœa and dysenteric condition with blood and mucus; œdema of the feet was sometimes but not constantly found to be present. The post-mortem appearances were also found to be distinctive, one of the most interesting being the presence of large ulcers with great thickening and congestion of the mucous membrane of the large intestine. Perforation was found in certain cases to have taken place. With regard to the relationship of the disease to kala-azar Lieutenant Christophers was unable to detect any increase in pigmentation or anything in the asthenia or the duration of the disease differing from what is usually present in ordinary cases of so-called "malarial cachexia with enlarged spleen." However, a specimen sent by Dr. Bentley to Captain Donovan from the spleen in a case of kala-azar presented very numerous examples of the bodies under investigation and Lieutenant Christophers accordingly concludes that if they are the cause of the disease then kala-azar and malarial cachexia with enlarged spleen must be essentially of the same nature.

A minute description of the parasites is included with some well-depicted illustrations. The bodies are seen in great numbers in an unchanged state in the leucocytes, especially being present in the large mononuclear cells. The distribution of the parasite in the body is detailed and the method of staining it by a modification of Romanowsky's stain is given. Finally, in comparing these bodies with certain species of piroplasma the essential differences of the latter to the bodies concerned in the human infection are pointed out, one of the most important being the absence of any appearance like the highly distended double chromatin masses. There is a complete absence also of the human parasite in the peripheral blood in all cases; in the case of piroplasma, however, the latter is found readily enough in some form or other in the peripheral blood. As the result of his researches Lieutenant Christophers shows the distribution of the parasite in the body to be very limited and that there is only a superficial resemblance to piroplasma. He concludes that the difference between the two forms is so great that strong evidence must be forthcoming before the new parasite can be placed in the genus piroplasma. He holds that the organism is distinct from piroplasma but that it is suggestive of the spores of a microsporidium. Finally, as regards the zooglœa masses, the author considers that the substance is the protoplasm of the large cells in the liver and spleen and that these large cells are not themselves parasitic.

Pediatrics. By THOMAS MORGAN ROTCH, M.D. Fourth edition, rearranged and rewritten. London and Philadelphia: J. B. Lippincott Company. 1903. Pp. 1021. Price 25*s*.

IN preparing this the fourth edition of "Pediatrics," according to the statement in the preface Dr. T. M. Rotch has made certain changes and systematically revised the text. The volume can, however, hardly be described as other than a reprint of the third edition. We have compared these two latest editions page by page and have succeeded in finding only a few insignificant changes. That so few alterations have suggested themselves to the author tends to confirm the opinion which we had formed in respect of the third edition—namely, that it would be very difficult to improve upon it or to impeach its accuracy. We notice one important change, however, on p. 201. In a new paragraph the point is emphasised that during the early months of life the substitution of the proteids of whey for the proteids of whole milk is of the greatest advantage in the feeding of the majority of infants. To be able to control and to vary the respective percentages of lactalbumin and caseinogen in preparations of modified milk no doubt makes for progress in the science of infant feeding but unfortunately it further complicates an already involved method.

We are glad that Dr. Rotch remains firm as regards the accurate composition of milks although his views on the question have been strongly criticised both in this country and in America. It has been claimed in opposition to his postulates that mathematical accuracy is not required and that the limits of an infant's powers of adaptation as regards food are much wider than he admits. It is quite a misrepresentation of Dr. Rotch's views to infer that he insists upon mathematical accuracy or that he does not realise the extent of an infant's powers of adaptation. The point which he does insist upon is that infants should be fed on a system as accurate as circumstances allow and not by guesswork.

LIBRARY TABLE.

A Manual of Dental Anatomy, Human and Comparative. By C. S. TOMES, M.A., F.R.S. Sixth edition. London: J. and A. Churchill. 1904. Pp. 636, with 286 Illustrations. Price 12*s*. 6*d*. net.—In the preface to this edition the author remarks that "the accumulation of a somewhat voluminous literature, much of which, while falling short of carrying complete conviction, yet tends to unsettle the ideas hitherto prevalent upon such points as the methods of evolution and the homologies of the teeth, renders the task of presenting in small compass any general view of the subject one of ever-increasing difficulty." A perusal of the book, however, shows that he has accomplished his task in a most admirable manner. During recent years the numerous discoveries of fossil remains in different quarters of the earth have gone far to assist in the elucidation of certain problems of odontology. An example of this is to be found in the chapter on Proboscidia, where an account is given of the recent discoveries in Egypt in eocene formations of certain animals, the mœrotherium and palæomastodon, which throw considerable light on the dentition of the modern proboscidians. The chapter on the Evolution of Tooth Forms contains much that is new; the various theories are impartially considered, the author remarking that "for the present the determination of the homologies of the cusps set forth by Osborn seems to hold the field, though it may come to be modified in the future." The editing has been carefully carried out and the book thoroughly maintains its position as the standard work on the subject.

Catalogue by Harry W. Cox, Limited, Manufacturing Electricians. Manufacturers of all Apparatus in Connexion with X Rays, High Frequency, Electro-Therapeutics, Wireless Telegraphy, &c. Offices, 9–11, Cursitor-street, Chancery-lane, London, E.C. Pp. 113.—This small work is something more than a mere catalogue of apparatus though it will be sent gratuitously to all registered practitioners. It contains full descriptions of Cox's heavy discharge inductive coils, of the Mackenzie-Davidson motor mercury break, of the different kinds of interruptors, of x-ray tubes, and of all the different apparatuses and implements necessary in x-ray work. There are sections devoted to the lamps for treatment of lupus and rodent ulcer and to high-frequency apparatus. The last 30 pages are entitled "Practical Hints to Beginners." They comprise a simple explanation of the x-ray apparatus, with instructions how to set about work, instructions for connecting and working Cox's base and portable x-ray coils, instructions for adjusting the "Cox" contact breaker, brief instructions for connecting and working the Mackenzie-Davidson mercury interruptor, instructions for using the electrolytic break and the Mackenzie-Davidson cross-thread localiser, and instructions for connecting up and working of

rheostat from mains, for charging accumulators off the alternating mains by means of the Chaplin rectifier, and brief instructions for charging accumulators. The novice is taken, step by step, through the process of taking a radiograph and the explanations and hints given should enable him to make a satisfactory beginning as a skiagrapher. The book will prove a useful one, as it is practical in its aims and is fully illustrated.

Radium and all about it. By S. R. BOTTONE. London: Whittaker and Co. 1904. Pp. 96. Price 1*s.* net.—To those interested in radium this little book will serve as a trustworthy elementary guide. It is written with great lucidity and it summarises most of the trustworthy information concerning radium. The history of the discovery is given clearly, the mode of detection and extraction is briefly described, and then the properties are considered in greater detail. In the final chapter on Theoretical Considerations numerous extracts represent the recent views of Professor Rutherford, Sir William Ramsay, Mr. Soddy, and other observers. In a popular form this little book is to be commended for its accuracy and simplicity, and it should serve to steady the ideas of those who have chiefly known of radium through misleading articles in popular magazines and in the daily press.

Guy's Hospital Nursing Guide: Handbook of Nurses' League and Register of Nurses Trained at Guy's Hospital. London: Ash and Co., Limited. 1904. Pp. 102. Price 1*s.* 6*d.*—The original object in view in the preparation of this work was simply to provide a Handbook of the Nurses' League of Guy's Hospital and a Register of the Nurses trained at this institution. In the course of its preparation the desirability was recognised of including a section which would be of general service to the community. This has been done and the earlier pages constitute a short nursing guide which those who aspire to enter the nursing profession may consult with advantage. This is a very useful little book, it is clearly written, and it contains much valuable information presented in a form which will facilitate its acquisition. The chapters on Nursing as a Profession, Private Nursing, and District Nursing are quite what they should be; they are full of valuable counsel. For the past and present members of the Nurses' League the book will, of course, possess a special interest. The register of nurses contains information which will be useful to practitioners who may send to the Guy's School for nurses to help them in their daily work.

JOURNALS AND MAGAZINES.

Annals of Ophthalmology. Edited by H. V. WÜRDEMANN, M.D., and CLAUD A. WORTH, F.R.C.S. Eng. Published quarterly. British edition by Baillière, Tindall, and Cox, London. Price 21*s.*—The *Annals of Ophthalmology*, a very superior journal on the subject of which it treats, has completed its twelfth year of existence and with the commencement of the thirteenth it has begun the issue of a special English edition, presided over by Mr. Claud Worth. The *Annals* contain a large number of original communications as well as *résumés* of the ophthalmic progress in many countries by such well-known writers as Landolt, Nuel, Rampoldi, da Garda, Pinto, Snellen, Hansen, and others, none of whom receives any remuneration for his labours. The journal is well deserving of support and we trust that many of our readers who wish to keep themselves abreast of modern ophthalmic work will become subscribers to it.

SEWERAGE SCHEME FOR CHRISTCHURCH.—The Local Government Board has intimated its approval of the Christchurch (Hampshire) sewerage scheme which is estimated to cost about £29,000. The population of the town is 3838.

ANNUAL GENERAL MEETING OF THE MEDICAL DEFENCE UNION.

THE Medical Defence Union held its annual general meeting on May 26th in the hall of the Medical Society of London, Chandos-street, Cavendish-square, London. The chair was occupied by the President of the union, Mr. M. A. MESSITER.

Mr. MESSITER delivered an interesting presidential address and concluded with the following motion:—

That the report of the council for the year 1903 now formally presented and which has been circulated to all members of the union be received, adopted, and entered upon the minutes.

In the course of his remarks he referred in detail to many parts of the report and was able to make the most satisfactory statements of the progress and financial soundness of the union. A certain portion of the address was occupied by a consideration of the scheme of medical defence put forward by the British Medical Association for the consideration of its branches. Mr. Messiter eulogised in the highest terms the importance and worth of the British Medical Association, but in regard to medical defence he argued that if the British Medical Association succeeded in its effort the result would be the establishment of a fifth medical defence society, there being already two in England, one in Scotland, and one in Ireland.

Dr. J. G. GLOVER, in seconding the motion, said that the report of the council was a perfect education in itself. It revealed very fully and clearly the pitfalls of medical practice and stood out as a record of success which very few societies could possibly hope to have. The record of success of the union proved its growth, its experience, its ability, and its stability. The number of effective societies in the profession was not so large that they could afford to allow the Medical Defence Union to destroy itself and referring to the scheme of medical defence promoted by the British Medical Association Dr. Glover secured a hearty round of applause by asserting that the merging of the union into the association would be a suicidal mistake. There were 1600 men in the Medical Defence Union who did not belong to the British Medical Association and it would be a hardship on those men to force them to pay 35*s.* a year for medical defence. Dr. Glover concluded his speech by declaring that the sentiment of the medical profession was overpoweringly in favour of the Medical Defence Union continuing its valuable work and arriving at a still greater and stronger position than that which was recorded in its report for 1903.

After Mr. E. D. VINRACE, Dr. W. SMITH, and Dr. A. G. BATEMAN had spoken the motion was put to the meeting and carried unanimously.

Dr. F. J. BUCKELL then proposed the following motion:—

That this meeting of the members of the Medical Defence Union cordially approves of the action taken by the council of the union in reference to the scheme proposed by the British Medical Association in respect of medical defence and agrees to aid the council of the union in maintaining the integrity of the union in its entirety as at present existing.

He said that the collective defence of the profession comprised in such work as bringing transgressors before the General Medical Council and the prosecution of quacks legitimately belonged to the British Medical Association. It had been stated that the standing committees of the British Medical Association carried on the work of collective defence but no one ever saw the Association bringing anyone before the General Medical Council or prosecuting quacks in courts of law. As a matter of fact, collective defence was carried on by the Medical Defence Union and as the scheme put forward by the British Medical Association only provided for individual defence, therefore in the event of the Medical Defence Union coming to an end the work of collective defence would cease.

After Mr. P. MACLEOD YEARSLEY had seconded the motion Dr. E. R. FOTHERGILL urged that the meeting should not pass the motion; his contention was that all interested in the matter should meet at a round table and secure the formation of one society for medical defence.

Mr. W. S. NOCKOLDS then spoke and was followed by Mr. J. T. MACNAMARA who asked what guarantee there was that medical defence by one society would continue to be carried on by such a body, for it was clear that the right to start another society for medical defence was always open to anyone.

The motion was then put to the meeting and carried.

The usual formal motions were then proposed, seconded, and passed practically without debate.

THE LANCET.

LONDON: SATURDAY, JUNE 4, 1904.

The General Medical Council and Medical Education.

THE present session of the General Medical Council will be chiefly memorable for the debates on Saturday and Monday last which we report at considerable length this week. In both of these debates the attitude towards the Council of the Royal College of Physicians of London and the Royal College of Surgeons of England was sharply criticised and on the latter occasion the situation was not improved by the speeches which the representatives considered it their duty to deliver, though Mr. MORRIS's remarks were admirably thought out. This is much to be regretted, since it is evident that the Council and the English Royal Colleges are agreed concerning the general broad principles upon which improvement in medical education can be effected. It is easy to understand that many of the terms employed in the heat of debate may provoke strife, but temptations in this direction should be avoided. The medical profession is mainly concerned about the accurate adjustment of the points at issue between the Royal Colleges and the General Medical Council because the settlement of the differences now existing will bring peace and opportunity for attention to other matters. Interest in the progress of medical education is superior to quibbles about whether "recommendations" or "requirements" is the right word for the General Medical Council to employ when supervising the educational curriculum of a qualifying body. The claims of ancient privileges by the Royal Colleges must always be of the greatest sentimental value, but these again must not be allowed to withstand the course of progress.

The debate on Saturday, May 28th, was upon a motion by Sir VICTOR HORSLEY to the effect that the courses of study laid down in the new regulations relating to the first year of professional study and to the minimum length of courses of instruction to be required in chemistry, physics, and biology by the English Conjoint Board were "insufficient," the word "insufficient" implying report to the Privy Council who may, after hearing the body to which the report relates, withdraw from such body the right to hold qualifying examinations. The new regulations of the English Conjoint Board have evidently been framed with the direct desire to permit the study of preliminary scientific subjects to be pursued at recognised institutions other than medical schools. It is perfectly clear that the Royal Colleges are not favourable to the expensive development of separate courses of study in the ancillary sciences in connexion with all the medical schools—a view which most practical teachers share. They are prepared to be content with evidence that their students have enjoyed sufficient educational opportunities to enable them to pass examinations of a written and practical character, this being, by the way, the attitude taken up by the University of London. The new regulations and synopses of the Conjoint Board mark a genuine desire to improve the nature of their first professional examination, and in the satisfaction with which these changes should be greeted the tardiness of action and the stages of development might have been gracefully forgotten. Sir VICTOR HORSLEY thought otherwise and after the regulations had been formally received and entered in the minutes, he protested that the General Medical Council must be the supreme authority in medical education, that it did not recommend, it "required," courses of study and examination. This position is perfectly unassailable, there must be a supreme authority, a coördinating centre in educational matters. The General Medical Council practically fulfils the functions of a board of studies, where various views may be freely expressed and discussed and where some degree of harmony may be attained between the different examining bodies. Criticisms from such a body should be entitled to respect and it should never be necessary to enforce authority by reference to "requirements." In the regulations under consideration the Royal Colleges have made three noteworthy concessions to the wishes of the General Medical Council: the length of the minimum course of instruction in chemistry, physics, and biology has been furnished; whatever length of time is devoted to this instruction it is not to count for more than six months; and this preliminary scientific examination must be passed before attendance upon anatomy and physiology will be recognised. Dr. WINDLE made a good point in contrasting the regulations of the Conjoint Board with those of the University of London, and emphasised the educational importance of a well-ordered curriculum as compared with that of a severe examination. The contention of the Conjoint Board is that under their scheme each factor in education is properly looked after, thoroughly supervised institutions being alone recognised, and the character of the examination being adequate. Upon division Sir VICTOR HORSLEY's motion was lost by a large majority and the new regulations of the Conjoint Board were therefore regarded by the General Medical Council as "sufficient." But though victorious in the sense that they have satisfied the requirements of the Council the Royal Colleges have been reminded that they have been pugnacious and that they have not set the hoped for example of acquiescence in the judgment of the Council. The question is sure to arise again in the near future and in our opinion it can only be settled in one way.

And what that way will be was indicated by the debate in the Council on the following Monday, which was a no less stormy discussion of the position of the medical student at the commencement of his career. It was proposed that the Lord President of the Privy Council should be requested to introduce into Parliament a Bill to confer on the General Medical Council statutory power to establish and to maintain registers of medical and dental students and to impose a fee not exceeding £1 for registration therein. The arguments in favour of this innovation were extremely simple. Foremost is the fact that the expenses of the General Medical Council have for some years been exceeding the income and it was estimated that this new source of income would more than counterbalance the average loss. This argument might have been allowed to pass unchallenged but Sir JOHN BATTY TUKE explained further

that the Council would have the power of approving or disapproving of the institutions recognised by various licensing bodies at which medical study could be begun. He endeavoured to be as impersonal as possible but stated generally that the licensing bodies would lose the right to nominate the educational institutions where the examinations in general education could be accepted. Similarly the right to nominate bodies at which medical education could be begun would be forfeited. As, of course, it is exactly this right for which the English Conjoint Board is contending and upon which the new educational scheme in respect of the preliminary sciences depends, the amplification of the intention of the motion furnished excuse for another heated debate. The representatives of the two Royal Colleges saw in the statutory registration of students and the payment of a fee threats to the chartered rights and powers of the licensing bodies. Dr. NORMAN MOORE, for the Royal College of Physicians of London, reproved the Council for its appetite for money and for increased powers, while Mr. HENRY MORRIS, for the Royal College of Surgeons of England, explained that the attitude of his College to the General Medical Council "was simply, so far as any opposition was concerned, one of defence and not one of defiance." These remarks supplied subsequent speakers with opportunities of forcible reply. The charters of the English Royal Colleges must naturally weigh much with the authorities of those Colleges and their representatives are carrying out their duty in attaching importance to them. But the Council is more likely to listen to the great argument of the Conjoint Board, that men qualified by the Board form upwards of half the Medical Register, than to any reference to ancient privileges put with however great sincerity and conviction. The debate closed with some admirable words from the President who took up this position while giving good reasons for supporting the motion, which was adopted by 22 votes against 6. These two discussions, although reaching right conclusions, cannot be said to reflect credit upon all of those who took part in them. The issues were simple on both occasions. There was no doubt that the general sense of the meeting would be in favour of conciliation during the first discussion on the regulations of the Conjoint Board; and there was equally no doubt that the General Medical Council would welcome the scheme of registration which should restore its solvency and increase its efficiency. Before these conclusions could be reached much valuable time had been spent in political strife which embitters relationships, increases antagonism, and is likely to impede progress in subsequent meetings.

What is Brandy?

WE have never had any doubt as to the correct answer to the question "What is genuine brandy?" Brandy is spirit distilled from the fermented juice of the grape. As the readers of THE LANCET know, we took some pains a few years ago to lay before them all the facts connected with the brandy industry at Cognac and in the Charente district and to throw some light on the character of the brandy sold and consumed in this country. There can be no disguising the fact that of recent years a large section of the spirit trade has adopted a method of business which has hoodwinked the public. Spirituous liquors, chiefly brandy and whisky, have been placed upon the market which were not accurately described by the labels upon the bottles. We have pointed out again and again that the terms "brandy" and "whisky" had specific meanings, these terms being used to distinguish in the former case a spirit derived exclusively from wine and in the latter case a spirit derived from barley malt. We have been assured that the attenuation of genuine brandy or whisky with a spirit made from grain, potatoes, or other material was the result of the demand made by the public in favour of a spirit of negative rather than positive characteristics. It suited certain sections of the trade to say this, while all the time they knew perfectly well that their real object was to put upon the market a cheaper spirit and to gain a wider margin of profit upon it. Whatever else may be said such trading is not honest dealing with the public, apart altogether from the question of whether this or that spirit is more wholesome than the other. The point is that spirits are distinguished by certain names which, after all, imply positive characteristics. Brandy, whisky, and rum are distinguished by specific flavours derived not only from the materials from which they are made but from the manner in which they are distilled. It is true that chemistry has not given us as complete an insight as may be desirable on the question as to why one spirit differs from another in regard to its physiological action or its flavour. We do know, however, that there are important differences between the action of pure or plain spirit and a spirit distilled from the fermented juice of the grape or from malt in the simplest form of still, and these differences coincide with certain variations in the chemical composition of spirits.[1] In the production of plain or silent spirit every care is necessarily taken to eliminate positive characters. In fact, when the object is merely to produce neutral alcohol care is taken to obtain a spirit without flavour and without odour, the presence of which would, of course, indicate impurities so far as regards alcohol. On the other hand, in the production of spirit from the grape or from malt the object of the distiller is to preserve so far as possible the flavour of the original material. For the purposes of a beverage pure spirit is inadmissible because it is flavourless. Further, it is idle to contend that brandy and whisky are esteemed because they are merely alcohol. It is well known, and has been thoroughly recognised in clinical practice, that genuine well-matured brandy exerts a powerful physiological action which pure alcohol alone is not able to do. Genuine matured brandy possesses a well-known restorative power over and above that due to its alcoholic contents. That being so it is perfectly clear that when a person asks for brandy and gets a more or less plain spirit he is not receiving an "article of the nature, substance, and quality" demanded, and is obviously prejudiced.

It was with these plain facts in our minds that we decided some years ago to undertake a full investigation into the

[1] "The effects of alcohol on the blood pressure and lymph circulation are modified very considerably by the presence of other constituents in spirits, wines, &c." ..... Inasmuch as absolute ether gives us simply the cadiac stimulant curve it may be suspected that the ethers exert this modifying influence."—Dr. George Oliver in the Oliver-Sharpey Lectures on Recent Studies on the Tissue-Lymph Circulation, THE LANCET, April 30th, 1904, p. 1179.

supply of brandy in this country. The results of this investigation appeared in our columns in the form of the report of our Special Analytical Commission on Brandy.[1] We felt at the time that this work was of the utmost importance to the public; we now realise that it has had influences of a greater magnitude than at first sight appeared, in that it has led to quite a campaign throughout the country being undertaken against the sale of spirit called brandy which in reality is not brandy. Discredit chemical analysis as many are inclined to do, they cannot shut their eyes to the fact that it was the results of analysis published in the report of THE LANCET Commission which has ultimately brought this species of fraud within the operation of the Sale of Food and Drugs Act. We are undisguisedly proud to have been the means of initiating what promises to be a reform of the utmost importance and interest both to the public and to the medical profession. The attitude of the spirit trade to us when the report of THE LANCET Commission appeared was not hostile, judging from the opinions expressed in the journals which voice the trade. It now seems clear, however, from the recent proceedings at the North London police court that the views we expressed and have since consistently adopted have led to a cleavage amongst brandy merchants. A wine merchant was summoned by the Islington borough council for selling as brandy "that which was not of the nature, substance, and quality" of brandy and was convicted after an exhaustive hearing. There were witnesses in this case, described as "leading members of the trade," who declared that if to plain or silent spirit were added sufficient Cognac brandy to give it the requisite flavour and aroma the blend would be brandy, and one witness further declared that during the 40 years that he had been in the trade brandy had never been considered to be a spirit exclusively derived from the grape. Another member of the trade in answering a question put to him by the magistrate said that he would regard a mixture of any spirit, whether from beetroot, potato, or grain, as genuine brandy. It seems to us that such representatives of the trade should be exposed.

The value of analysis in the case was impugned, together with the certificate describing the sample as containing 60 per cent. of spirit not derived from the grape, and yet the wholesale dealer who had supplied the sample to the defendant admitted that the opinion which he formed on purchasing the spirit was that it contained perhaps 40 per cent. of grain spirit, and he thought that the consignment sent to the defendant was "excellent value." One of the analysts for the defence said that he had made an analysis of the sample and the results were consistent, he maintained, with those obtained with a brandy derived from the grape, though he admitted that the amount of ethers was small. The evidence of the merchant who supplied the articles must have rudely upset this analyst's interpretation. We do not suggest that analysis can discriminate between the pure alcohol obtained from wine and that obtained from malt or sugar or any other material. Alcohol is alcohol whatever its source may be. But analysis easily differentiates between a pot-still and a patent-still spirit because of the secondary products, flavours, and so on, present in the former which are practically absent in the latter; and the amount and relationships of these secondary products vary considerably with the material from which they are derived. The quantities of ethers, aldehydes, acids, furfural, and higher alcohols are not the same in brandy as in whisky, neither are the amounts present in the same relation to each other.

The line of defence was ingenious and amounted to the following. It was assumed that brandy is correctly defined as a spirit distilled from wine or the fermented juice of the grape; then it followed that if the spirit from the grape were highly rectified by means of the patent or fractionating still, whereby secondary products characteristic of good brandy would be removed, the liquid would still be brandy. The magistrate took a very proper and decisive view of this argument. "He did not think," he said, "that after the spirit obtained by the distillation of wine had been so highly rectified as to have lost the properties peculiar to spirits so obtained it was still spirit obtained by the distillation of wine so as to fulfil the definition of brandy." Mr. FORDHAM may be heartily congratulated upon this very sensible acceptation of the meaning of brandy. Highly rectified spirit cannot for a moment be properly regarded as brandy even although nothing but grape may have been used in its production. Otherwise brandy could never be the medicinally valuable agent that it is universally admitted to be. The fact is, and the trade are bound to recognise it once for all, that the patent still has placed in the distiller's hands a machine which will enable him to refine alcohol from any source, whether it be good, indifferent, or thoroughly bad. The distiller knows also full well that with sick, sour, or inferior wines, or other not very choice materials, the use of the patent still is obligatory in order that the foul smells and evil flavours—evidences of unwholesomeness—may be eliminated by its agency. This is why the pot-still spirit is practically certain to be honest, for in a still of the simplest form of construction both the vices and virtues of the wine must come over with the spirit. It follows that only wine with virtues can be distilled in the pot-still. Mr. FORDHAM had fine opportunities of considering the *pros* and *cons* of the case and he evidently bestowed considerable thought to its many aspects. The evidence was full of technicalities but he showed a perfectly clear grasp of the points presented to him, with the result that he has given a decision completely in harmony with commonsense. We hope that the issue of the case will do much to check the almost unbounded substitution which is being practised by the spirit trade. We cannot regard this decision in the slightest degree as a menace to the interest of the trade. They have only to deal fairly with the public by disclosing in accurate terms the nature of the article which they offer for sale. According to the view that the public exhibit a preference for mixtures or substitutes the trade ought not to lose by revealing the fact that the article is not a pure unblended spirit. Candour should put money in their purse on their own showing.

[1] THE LANCET, Nov. 29th, 1902.

The Relation of Human to Bovine Tuberculosis.

THE Royal Commission which, under the chairmanship of Sir MICHAEL FOSTER, was appointed to inquire into the relations of human and bovine tuberculosis as a result of the startling announcement made by Professor KOCH at the British Congress on Tuberculosis of 1901, has acted very wisely in issuing an interim report. Pending the issue of some such document there has been a tendency to go slow in the matter of prosecutions and to postpone fresh legislative action. The readers of THE LANCET will not be astonished at the result at which the commissioners have arrived, as we have from time to time drawn attention to the progress of the work done in this and other countries in connexion with this subject. As we pointed out in a leading article in THE LANCET of Oct. 31st, 1903, p. 1243, the possibility of the transmission of tuberculosis of human origin to bovines has been placed beyond dispute by the numerous experiments which have been carried out since KOCH and SCHÜTZ obtained their negative results. At the same time we drew attention to the fact that the only points which were left over for discussion and experiment were the facility with which human tuberculosis can be transmitted to the bovine subject and the inferences which are to be drawn in respect of this danger to the public health. The Royal Commissioners have now placed the seal of their authority upon results which are matters of common knowledge.

The points referred to the Commission were grouped under three heads: (*a*) whether tuberculosis in animals is one and the same; (*b*) whether animals and man can be reciprocally infected with it; and (*c*) under what conditions, if at all, transmission of the disease from animals to man takes place and what are the circumstances favourable or unfavourable to such transmission. The present interim report goes far to answer completely the question put in (*a*) and partially the problem presented in (*b*). Concerning (*c*) we must await a subsequent report. The commissioners first turned their attention to determining whether the bacillus of bovine tuberculosis is specifically distinct from the bacillus of human tuberculosis. With the view of solving this problem more than 20 strains of tuberculous material from the tuberculous sputum, lungs, glands, and joints of human subjects were employed, the effects produced being compared with those resulting from the employment of different strains of tuberculous material of bovine origin. The details of these experiments are held over by the Commission for a subsequent report, but the conclusions are given with a commendable directness which we shall closely follow. Seven of the strains of human origin when introduced into cattle gave rise at once to acute tuberculosis and the development of widespread disease in the various organs, such as the lungs, the spleen, the liver, and the lymphatic glands. In some instances, it is added, the disease was "of remarkable severity." These experiments would seem conclusively to suggest that KOCH and SCHÜTZ must have been dealing with strains of tuberculous material of a different type. In this case the contradictory results which have been obtained by different observers are to be explained by slight variations of the effect of the soil on the seed, much in the same way, perhaps, as some persons are immune to a disease at one time and susceptible at another, or resistant to one strain of scarlet fever while highly susceptible to another. This view is rendered probable by the behaviour of the remaining strains of tuberculous material which were made use of by the commissioners. In these the disease was "either limited to the spot where the material was introduced (this occurred in two instances only) or it spread to a variable extent from the seat of inoculation along the lymphatic glands with at most the appearance of a very small amount of tubercle in such organs as the lungs and spleen." But the subsequent history of these cases is extremely instructive and suggestive. When tuberculous material was taken from these slightly affected bovines and introduced into other bovines, or into guinea-pigs from which bovines were subsequently inoculated, such material had up to the time of the report given rise in the case of five of the remaining strains to general tuberculosis of an "intense character" in the bovine.

As regards the identity of the human and bovine disease the commissioners state that after careful comparison they have "found the one, both in its broad general features and in its finer histological details, to be identical with the other," and they have failed to discover any character by which they could distinguish the one from the other. The results of their investigation have indeed been so striking that they have felt it their duty to make them known without further delay. Obviously the commissioners are not yet prepared to answer fully all the problems presented to them, or to estimate the danger to the public health of the consumption of tuberculous milk and meat, but nevertheless they come to this significant conclusion: "that tubercle of human origin can give rise in the bovine animal to tuberculosis identical with ordinary bovine tuberculosis seems to us to show quite clearly that it would be most unwise to frame or modify legislative measures in accordance with the view that human and bovine tubercle bacilli are specifically different from each other, and that the disease caused by the one is a wholly different thing from the disease caused by the other." Few pathologists or epidemiologists will, we imagine, join issue with this conclusion and many will regard this identity of the disease as an adequate basis for more rigorous precautions as regards our domestic milk-supply. We shall, however, await with the greatest interest the further report of the Commission in relation to the measure of the danger incurred by man from the consumption of tuberculous milk and meat. This aspect of the problem will have to be approached largely from an epidemiological and statistical standpoint, albeit there will still be room for much experimental work in connexion with the mammals nearest to man. The commissioners pay a graceful tribute to Sir JAMES BLYTH for his generous assistance in placing his farm at Stanstead at their disposal, and we could wish that tributes of a like nature from science to wealth were more frequently called for. Sir JAMES BLYTH by his munificence has saved the public purse and earned the gratitude of science.

Annotations.

"Ne quid nimis."

METROPOLITAN HOSPITAL SUNDAY FUND.

June 12th will be Hospital Sunday. We publish to day the annual supplement in which we urge the claims of the London hospitals upon the generosity of the public and we may remind the members of the public that although the amount collected for the Hospital Sunday Fund has shown an almost steady increase year by year, yet the amount of sickness and suffering for the relief of which the money of the Fund has to be applied does not seem to lessen and the hospitals are in as much need as ever of the contributions of the charitable. We need not repeat here the reasons why the public should contribute to the Hospital Sunday Fund, for they are laid down in the supplement, but we earnestly hope that despite the growth in the expenses of living which has become so marked of late years the public, both those who are blessed with a superfluity of this world's goods and those who are not, will contribute their sovereigns or their pence towards the aid and succour of their poorer brethren. They should remember that the hospitals enable the medical profession—to whom the rich and poor alike look for succour when ill—to keep their knowledge up to the high level which modern science dictates. Mr. George Herring has again offered to give a donation of 25 per cent. on any sum collected in places of worship up to £100,000, a generous offer which should form a stimulus to others, for it means that every sovereign subscribed to the fund becomes by Mr. Herring's munificence 25*s*.

COMPULSORY MILITARY TRAINING.

IF the majority report of the Royal Commission recently issued on the organisation of the militia and volunteers travels beyond the limits intended to circumscribe the subject of their inquiry the Royal Commissioners had nevertheless the courage to follow it up to what seemed to them to be the only logical conclusion at which they could arrive. The adoption of compulsory military service in this country after the manner of Continental Powers is, it is needless to say, a very big question. It may be neither necessary nor suitable to provide a large army for home defence for an island Power which if it once lost command of the sea would be more at the mercy of its foes by way of famine than by assault. Be this as it may, we do not think that the Royal Commissioners will have done any harm by having aroused public attention to a subject which sooner or later—and the sooner, perhaps, the better—must be thoroughly threshed out and settled. The report, to which there are several dissentients, is accompanied by two volumes of minutes of evidence and a voluminous appendix, so that there is no lack of material for consideration. After pointing out the inability of our present auxiliary forces to defeat an invading army, the main points in the conclusions of the Commission are that the whole able-bodied male population should be trained to arms, the training to be given within one year, with subsequent annual periods of a few weeks' exercise. We venture to doubt whether public opinion will at the present time be prepared to accept the proposal of a one year's conscription. But from a political, industrial, and economic point of view the question of compulsory military service does not concern us. We can only consider it in its medical and hygienic aspects, and in these relations we would refer our readers to a leading article on the subject which appeared on p. 1747 of THE LANCET of Dec. 23rd, 1899. From the physical, moral, and mental side we have no doubt of the beneficial effect that might be expected to ensue from a course of military training and open-air exercise on the youth and young manhood of our population It is not easy, indeed, to overrate the value of some kind of military training. The proof of this being so can be seen by contrasting the appearance of the young and raw recruit on enlistment with what it is soon afterwards or when he has become a soldier. In physique, general bearing, intelligence, and alertness of mind and body the change is always apparent, and the improvement often quite remarkable. And, as regards the class from which his officers are drawn, the physical growth and development of the cadets on joining the military colleges at Woolwich and Sandhurst as compared with these conditions when leaving are sometimes even more striking than in the case of the private soldier.

MOTOR-CARS FOR MEDICAL MEN.

THE *Autocar* has just issued a special number with the above title which all waverers between horses and motors may consult with advantage. The number contains articles written by medical motorists and 15 pages of letters from owners of cars in the profession. Naturally the pleading throughout is of an *ex parte* nature. The experience of many of the writers is small, but it is of interest to get even a small census of the builds of cars employed. The reliability of motors stands in a very different position to-day from that which it held three years ago and may be regarded as established; there is no question as to the enormous saving of time and the leisure earned by driving a car instead of a horse. Our chief concern, therefore, in studying this article is to get a real clue as to the relative economy of the two methods of locomotion. The question of cost is complex and we do not find that the numerous statements afford great help. Most of them are very vague and some of the most detailed are obviously fallacious. If we consider the mere upkeep, the average repairs, the cost of petrol and lubricant, and the heavy expenditure on tyres as set against the ordinary expenses of a stable, we arrive at the following general conclusions. First, that when the mileage is so great that three or more horses have to be maintained there is no question as to the economy of motors even if a reserve motor is kept. Again, if the area of work is small and the necessary mileage is low—say under 12 miles a day—the amount of petrol consumed and the wear of tyres involved are little enough to make the car compare favourably with the horse and trap. The doubtful cases are the practices which demand two or occasionally three horses. But this estimate of cost does not cover certain points of importance. First, there is the large capital outlay, the interest on which must be considered. No one can yet give us the probable life of a motor or any approximate estimate of its depreciation. We know now what the working life of a bicycle is; regularly worked it lasts in smart condition for about four years. Assuming (which we are far from doing) that the general type of motors is approaching the finality of model which the bicycle acquired some seven years ago, can we believe that the economical life of a motor is likely to be much longer? It probably will be longer on account of its greater strength of frames and general structure, but the depreciation must always be far greater than that of horses and carriages. Next, though the reserve of pace in a motor is very great, the reserve of carrying power is much smaller than that of a horse and carriage. But when we begin to deal with motors which can climb steep hills with four passengers, or those equipped with removeable closed bodies, the price soon runs up. A good car with tonneau and moveable omnibus top for work in a hilly

country will cost close on £400, and the extra weight soon tells on the bills for petrol and tyres. We do not also believe profoundly in the cheap lad as chauffeur. There is the further difficulty of the cost of hire of a car during repairs or the renovation of paint-work and parts which all carriages must undergo. Having decided on the advantages of a car, the would-be purchaser will be interested to learn what car the practitioners drive who have contributed to the *Autocar*. By some 33 letters it appears that the cars are nearly all small and of low horse power; only three steamers are represented (one an American "White" and two the now popular Turner-Milsoe build of Wolverhampton). There are two each of the little 4½ h.p. Swift and the 10 h.p. Clement, two small De Dions, two Oldsmobile, and two Cadillac. There is no other car repeated in the list except one notable exception; it is remarkable how the Argyll seems to appeal to the medical profession. We find no less than seven. The choice is unquestionably a good one, for the Argyll cars are very simple, very strong in frame, suitable for the hardest work, and have thoroughly good engines, not too high in power. The frame and gearing are built in Glasgow by the Hozier Co., but the engines are foreign. Among low-priced cars the little Cadillacs hold excellent records for reliability and hill-climbing power, but they are light in the frames for English taste. We should have expected more information on the important subject of tyres; hardly any advice upon the matter is given, but the opinion clearly stated by Mr. Morisson we believe is sound, that is to have pneumatic, not solid, tyres, but to have them extra heavy and strong; "Overtyre your car at first," he says, "and you will never regret it."

SOME MEDICAL FORMULÆ FROM AN EGYPTIAN PAPYRUS.

ALL students of the early history of medicine know how intimately it was connected with magic and shamanistic practices. A supreme instance of this mingling is afforded by the "Demotic Magical Papyrus," just published by Mr. F. Ll. Griffith and Mr. Herbert Thompson.[1] Unfortunately for science, whilst containing a multiplicity of magic, it presents but a modicum of medicine, and that of a very inferior kind, but such as it is it deserves mention in a modern medical journal. The papyrus is of the third century A.D. and is in comparatively good preservation, a matter of importance, for our knowledge at present of the Demotic script is so slight that unless manuscripts engrossed in it are very clear they cannot be correctly interpreted. Its 29 chapters are almost all devoted to incantations and invocations of the most puerile nature, the majority of them having erotic objects in view. Divination has its place and some incantations are for the curing of bites of poisonous reptiles and dogs. The first items of a medical character occur in the twenty-fourth chapter among formulæ for "drugging a person." The substances recommended for this purpose are: scammony (convolvulus) root, one drachm; opium, one drachm; mixed with milk. A second formula advises mandragora root, one ounce; liquorice, one ounce; hyoscyamus (henbane), one ounce; ivy, one ounce; to be given mixed in wine. The author appears to have apprehended an error in selecting the ivy leaves and therefore appends a botanical description of the plant, saying, "Ivy—it grows in gardens, its leaf is divided into three lobes like a vine leaf, its (leaf) is one palm in measurement, its blossom like silver, another says gold." This last statement may have arisen from the reference being to some very ancient Egyptian work, for in antiquity silver was called "white gold." One recipe in column 9 of the back of the papyrus is a recommended cure for gout. Its contents are one measure of euphorbia, a half measure of pepper, one measure of pyrethrum, probably an umbellifer, burning to the taste, one measure of adarces, and one of sulphur to be pounded together, mixed with wine and oil and applied to the part of the patient that was painful. Mr. Griffith points out that four of these ingredients occur in a prescription for gout provided by Alexander of Tralles—viz., spurge, pepper, πύρεθρον, and ἄδδάρκης. Dioscorides also mentions pyrethrum. Column 2 contains remedies for a sprained foot; one of them consisted of garlic, frankincense, and oil, macerated together, used as an ointment, and then the foot was to be bathed with cold water. Some paragraphs are occupied with diseases of the eye, maladies always sadly prevalent in Egypt. One, after giving various verbal spells, prescribes a collyrium of oil, salt, and nasturtium seed. The Coptic word for this has, in its Sahidic dialect form, been identified with the κάρδαμον of Dioscorides. In all this class of papyri the names of the demons, deities, or spirits invoked are generally the merest gibberish, but one in this document, Eriskhigal, is evidently the ancient Babylonian Persephone—Erish-ki-gal—a name only recently recovered from cuneiform inscriptions but which it is now evident was at one time known in Graeco-Roman Egypt.

[1] The Demotic Magical Papyrus of London and Leiden. Edited by F. Ll. Griffith and Herbert Thompson. London: Grevel and Co., King-street, Strand.

FRACTURE OF THE SCAPHOID BONE.

ONE of the results of skiagraphy has been to reveal fractures which, in consequence of their position, were not previously diagnosed, the injury being regarded as a sprain. In a paper in the *Boston Medical and Surgical Journal* of April 7th Dr. E. A. Codman expresses the opinion that in the majority of cases diagnosed as sprains in which recovery does not promptly take place there is a fracture. Among the commonest of unrecognised fractures is, he thinks, fracture of the scaphoid bone of the wrist. The following is a typical example. A youth, aged 20 years, injured his wrist in playing football. Though no crepitus was obtained splints were applied and worn for several days. The swelling and tenderness subsided to a certain extent. The joint remained sore and movements beyond a slight angle were very painful. About six weeks after the injury the patient consulted Dr. Codman who made a diagnosis of fracture of the scaphoid bone and confirmed it by radiography. As he thought it was too late to attempt to obtain union he kept the wrist in splints for only a fortnight and then had it massaged. It improved considerably but it still remained somewhat swollen and was painful on extreme movements. The patient could no longer play football and he frequently hurt the wrist in jostling his fellow students. During two years there was only slight improvement and at the end of this time the wrist could not be extended beyond an angle of 25° without great pain; flexion was less painful but in the extreme position almost as painful as extension. There was marked tenderness of the scaphoid bone which was best obtained by adducting the wrist and pressing with the thumb in front of the styloid process of the radius. About 40 cases of fracture of the scaphoid bone have been observed at the Massachusetts General Hospital, so that the injury appears to be common. Dr. Codman gives the following diagnostic points. There is no deformity, ecchymosis, crepitus, or abnormal mobility. There are localised swelling and tenderness in the region of the scaphoid bone—i.e., in the radial part of the wrist-joint,—limitation of active movements, and sharp pain on attempts at passive movement, the joint protecting itself by muscular spasm. The diagnosis should be confirmed by skiagraphy, the best method being to take an antero-posterior view during adduction. In most of the cases union does not take place and in those in which it does the callus is so

extensive as to interfere with the movements of the wrist. The treatment consists in endeavouring to obtain union by fixing the joint for at least three weeks. When union has not taken place and a considerable time has elapsed, if the condition of the wrist interferes with the patient's occupation, Dr. Codman recommends excision of the proximal part of the bone but he has never performed the operation. But in two cases of compound dislocation of the wrist in which the scaphoid was broken and its proximal half excised the patients had afterwards fairly good wrists.

A HUNDRED AND FIVE.

THERE has been a good deal of scepticism as to reported cases of people living for a century, but some that are heard of from time to time seem to be well authenticated. About three months ago the master of Blackburn workhouse took pains to verify the age of a man who had been 11 years in the workhouse and who died at the age of 105 years. He was cheerful, active, and industrious until a few months before his death and could read without spectacles till the last, and for the 11 years of his stay in the house he had acted as "ganger of the bedmakers." He was a snuff-taker and habitual smoker and "was not averse to a glass of beer." Perhaps those who take extreme views of the injury done by smoking, snuff-taking, and by even what is called a moderate use of alcoholic beverages may think that if he had abstained from them altogether he might have lived 30 or 40 years longer. That, however, is an unprovable proposition. The other facts of the case, which there seems no reason to doubt from the care taken as to the inquiry, go to show that heredity, independent of habits, has a large share in the causation of longevity, for it is stated that this old gentleman's mother lived to 105 and that he had a sister aged 102 who was killed at Preston a few years ago.

SCHOOLS AND INFECTIOUS CONDITIONS.

A REPORT has been presented to the Gloucestershire education committee by Dr. J. Middleton Martin, county medical officer of health, dealing with the importance of a systematic medical examination of children attending elementary schools to discover the existence of infectious conditions, whether acute specific diseases, infectious skin lesions, or parasites. This report points out the danger of school attendance in spreading these conditions—e.g., in one school alone 23 children out of a total of 65 were absent owing to ringworm, contracted apparently at the school—and since attendance at school is compulsory and by a recent Education Act the education committee is responsible for all children during the hours of school attendance, it is naturally of great importance that the conditions to which children are subjected at school should be as safe as possible. It is obvious that if effective action is taken the prevalence of such infectious conditions can be reduced to, and maintained at, a minimum and that therefore the spread of epidemics can be limited and thus many lives be saved. The county medical officer was invited by the committee to prepare a scheme dealing with one section of the county, the Stroud area being suggested. Naturally, since teachers are not in a position to form an opinion upon the infectious state of a child, to determine which in some cases may require a microscopical or bacteriological examination, the only practical method of dealing with the matter is to provide for a systematic medical examination of all the children. Dr. Martin has proposed a scheme, of which full details are given in the report, by which such an examination can be effected. He suggests that the simplest and most effective arrangement would be for the medical man nearest to a particular school to be appointed medical officer for that school and he has grouped the various schools in the Stroud district for this purpose. At the opening of schools the medical officer would be required to attend and to examine the children, carefully inspecting any child presenting a suspicious appearance and excluding all whom he might find suffering from any infectious or contagious conditions. The parents' attention would then be drawn to the reason for such exclusion, and the child would not be allowed to attend until a certificate of freedom from the condition was supplied by the family medical man or the school medical officer. In cases of notifiable disease, of course, the medical officer of health of the district would be informed. In cases of infectious or suspicious conditions arising during term time the child should be sent to the school medical officer, or, if advisable, the medical officer should be asked to see the child at home. In his report Dr. Martin suggests a graduated scale of payment of the medical officers and estimates the total cost for the Stroud district, comprising an average attendance of 6200 scholars, at £150 a year. He calculates that the total cost of such a scheme for the whole county would be £1500, while if as a result the average attendance was increased only 2 per cent. the gain to the county would be £1600, a rise of 1 per cent. being worth £800 a year. The scale of fees suggested is briefly as follows. For inspection of a school of which the average attendance is 100 or under, one guinea; from 100 to 200, one and a half guineas; from 200 to 300, two guineas; from 300 to 400, two and a half guineas; while for subsequent visits to examine small groups of children of under ten in number a fee of half a guinea per visit, or if over ten in number, one guinea, while for each child seen at the medical officer's house there would be a fee of half a crown, or if seen at the child's own home, five shillings. It is gratifying to notice that the Gloucestershire education committee has decided to carry out this scheme for the Stroud district, and the results of this pioneer effort will be watched with very great interest, as it is certainly a move in the right direction. It is, of course, probable that the details of the scheme may require modification, but there can be little doubt that the principle is a good one.

DIABETES INSIPIDUS.

AT the meeting of the Association of American Physicians held on May 10th some interesting observations on diabetes insipidus were recorded. Dr. Thomas B. Futcher of Baltimore described and analysed all the cases which have occurred at the Johns Hopkins Hospital since its foundation. There were altogether only seven cases—six in the hospital and one in the dispensary—so that the disease is a comparatively rare one. Out of the seven patients four had had syphilis and all of these improved after the administration of iodide of potassium. Heredity seems to be a factor of some importance in the production of the disease, as the observation of one family for four generations has shown that among 90 members more than 1 in 5 have suffered from the disease. The affection is more common in males than in females and is most frequent between 30 and 40 years of age. Even in a case in which no syphilitic history was obtained there was marked improvement after the administration of iodide of potassium with a gain of nearly 20 pounds in weight. Dr. W. H. Thomson of New York recorded a case in which miliary tuberculosis was found post mortem with tubercles on the floor of the fourth ventricle. Dr. James Tyson of Philadelphia had also found iodide of potassium of great benefit even when a syphilitic history was not obtained. Dr. Abraham Jacobi of New York was of opinion that among children diabetes insipidus was not a rare disease. He had found it in association with chorea and some convulsive diseases, and also after severe whooping-cough. He had also found it in

cases of hereditary syphilis. He agreed with the usefulness of iodide of potassium, but had also found ergot of service in the disease.

THE METROPOLITAN STREET AMBULANCE ASSOCIATION.

As will be seen by a letter from Dr. A. W. James, the honorary secretary of the above association, the membership has increased so rapidly that certain expenses have been incurred which there are no funds to meet. No subscriptions are asked for from members, so that the association is entirely dependent upon donations for funds to meet whatever expenses may be incurred. The work is carried on as economically as possible and the local secretaries, who number 110, give their time and trouble gratuitously. The London County Council has, as already noted in our columns, received a deputation from the association and has appointed a subcommittee to consider the question. Of the need of an efficient ambulance service for the unwieldy collection of towns which is collectively known by the name of London there can be no doubt and we earnestly hope that the small sum required—namely, between £70 and £80—will be raised.

THE ROYAL COLLEGE OF SCIENCE AND MEDICAL EDUCATION.

IT is announced that the Board of Education has appointed a departmental committee to inquire into the present working of the Royal College of Science. The reference to the committee is a wide one, since it is instructed to consider in what manner the staff, together with the buildings and appliances now in occupation or in course of construction, may be utilised to the fullest extent for the promotion of higher scientific studies in connexion with the work of existing or projected institutions for instruction of the same character in the metropolis or elsewhere; and to report on any changes which may be desirable in order to carry out such recommendations as it may make. It is seldom that any existing institution is provided with such a liberal extension of premises as that which will shortly be given to the Royal College of Science. The magnificent site occupying the whole length of the road opposite the University of London (formerly the Imperial Institute) is rapidly being covered by a splendid block of buildings destined to form additional quarters for the Royal College of Science. Rumour at one time had it that this new building was to be devoted to chemistry and physics, while natural history and allied subjects took entire possession of the original building standing a little further south-east. There were not wanting those who stated that the College required all this additional space to carry out successfully its existing work. The appointment of the above committee would seem, however, to indicate that those in authority regard this as a fitting opportunity to consider whether it may be possible to widen the scope of the work of the Royal College of Science. No more suitable time could have been chosen to consider whether it is possible for the Royal College of Science to render any assistance in the preliminary scientific education of medical students. The various authorities who are responsible for the education of medical students have for some time regarded the conditions of that preliminary scientific study as unsatisfactory. The reconstituted University of London has adopted a scheme which is destined to effect considerable improvements in these conditions and it is certain that this scheme must officially or unofficially come under the notice of the committee recently appointed by the Board of Education. It is much to be hoped that those who are interested in the proposed changes in medical education will take steps to be heard by the committee, and that the way in which the staff, building, and appliances of the Royal College of Science may be utilised for the promotion of higher scientific studies in connexion with the projected Institute of Medical Sciences of the University of London will be thoroughly thought out and clearly impressed upon its members. It will not be forgotten that in Huxley's time an attempt was made to make use of the scientific courses at the College for the purposes of preliminary medical education and it will no doubt be pointed out that notwithstanding Huxley's active sympathy and the cordial approval of the medical schools the experiment was somewhat of a dismal failure. Nor could any more hopeful result be prophesied now were it not for the proposal of the University of London to found an Institute of Medical Sciences at South Kensington within a stone's throw of the new buildings of the Royal College of Science. If it is found possible in any way for some of the resources of the Royal College of Science to be so used as to assist the University of London in forming a centre of education in preliminary and intermediate medical subjects a very great benefit would be conferred upon medical education in London. Nor would the educational benefits be confined to the medical students whom the Royal College of Science received within its walls. It is agreed on all hands that the admixture of different classes of students in our colleges is of the greatest benefit to education in its widest sense. The *personnel* of the students at the Royal College of Science would undoubtedly be benefited by the addition of a proportion of men preparing to enter the medical profession. With so many obvious advantages to be gained it ought not to be impossible to devise a scheme acceptable to the Royal College of Science, the University of London, and teachers in the medical schools.

PERSIAN MEDICINE.

PERSIA, whether regarded from the point of view of its history, its climate, its inhabitants, or its political importance, is a most interesting and delightful country. It is quite unspoilt by modern innovations, it is free from the worries of fiscal problems, passive resisters, questions in Parliament, and educational and religious difficulties, while its fertility, given a good water-supply, is inexhaustible. Altogether, its social condition is much the same as was the case in the days of the great Shah Abbas, who lived in the time of our Queen Elizabeth, and this being the case Persian medical science is still in a primitive condition. Our contemporary, the *Manchester Courier*, some weeks ago published two very remarkable articles by Mr. H. R. Sykes upon Modern Medical and Surgical Treatment in Persia. Mr. Sykes derived his information from Miss Bird who was formerly superintendent of the Kerman Mission Hospital. Kerman is one of the most important towns in Persia, being situated in latitude 30° 20′ N. and longitude 57° 2′ E., at the conjunction of several important trade routes some 200 miles from Bandar Abbas on the Persian Gulf which acts as its port. Through it flows trade between the Gulf, Northern Persia, Central Asia, and India, so that a hospital there has a large *clientèle* suffering from various diseases. Persian medicine is founded upon the practice of a Greek medical man who accompanied Alexander the Great in his Indian expedition and some of the more learned of the Persian hakims profess the teaching of Ibn Sina, better known to European readers by the Westernised form Avicenna, who was born at Bokhara in 980 A.D. Diagnosis is reduced to a simplicity which may well make the Western medical man turn green with envy. All diseases are either cold or hot. A hot disease requires a cold medicine and a cold disease a hot medicine. If the hakim is in doubt he first tries one remedy and then if that does not succeed he tries the other. Sometimes the patient gets well, in which

case the hakim takes the credit and the fee, which latter is often in kind. As an instance of this, one European medical man of our acquaintance after restoring to health a patient seriously ill with some sort of toxic fever, by means of 15 grains of calomel, was rewarded by a pair of socks. If the patient dies the hakim says that it is God's will. Surgery is in as crude a condition as medicine; fractures are treated by splints made of paper stiffened with white of egg but the limb is frequently bandaged so tightly that gangrene sets in. In Northern Persia, at any rate, syphilis is extremely frequent and the medical man whom we have previously mentioned frequently saw villages of which nearly the whole population showed syphilis in one form or another. Diseases of the eye, as throughout the East, are very common, more especially ophthalmia, the liability to which is increased by the dust and the glare. With trained medical men Persia might become a health resort of great value. There are many mineral springs, and in Northern Persia the district round the lake of Urmi possesses most valuable thermal waters. The lake of Urmi itself could be used for the same affections as those for which the waters of Droitwich are used in this country for it is a saturated solution of salt. A man bathing in it is quite unable to swim, for all that he can do is to lie on his back on the top of the water or to sit in it with his arms round his knees. A marsh surrounds the lake made up of sulphurous mud and at intervals are hot sulphur springs which have a great reputation among the natives for rheumatism and affections of the skin. In parts of Persia Armenian physicians are to be found who have had a European training but as a rule Western medicine is only to be found at the various missions. The American Presbyterian mission does excellent medical work at Urmi and the French Roman Catholic mission keeps up a hospital where the nursing is done by the sisters of St. Vincent de Paul, but, so far as we know, no medical man is attached to this mission. The Church Missionary Society also does useful work from a medical point of view at Julfa, near Ispahan (not the Julfa on the Araxes which is little more than a telegraph station), but on the whole medical science in Persia as it affects the natives is but little touched by Western ideas and as a rule the Persian hakim of to-day is the same as he is depicted in Morier's immortal work, "Hadji Baba."

THE POWER OF PRISONERS TO INJURE THEMSELVES.

A SOMEWHAT mysterious case was recently inquired into by Mr. Garrett at the South-Western police court without any definite conclusion being arrived at. A woman who undoubtedly had been put into a cell overnight very drunk was brought before the magistrate with marks upon her face and neck which, according to medical evidence, were consistent with her having been burnt with carbolic acid. A bottle which contained, or which had contained, carbolic acid was admitted by the police to have been found in her cell and its presence was unaccounted for, the police stating that the woman had been searched when she was put in the cell. The woman stoutly maintained that the burns had been caused by a member of the police at the station who had deliberately thrown the acid over her, but she declined to identify any particular man saying that as her glasses had been taken away she had been unable to see his features. In the circumstances Mr. Garrett ordered that the defendant should pay the fee of the medical man summoned to attend her and requested the police to investigate the matter. Upon such evidence no one would willingly impute to a constable the dastardly outrage charged by the woman, but the matter is certainly one which requires considerable attention on the part of the authorities. That a drunken woman should be able to conceal a bottle, whether of carbolic acid or of anything else, when locked up for the night is scarcely creditable to the vigilance of those who search prisoners at police stations. Concealment upon such occasions has led sometimes to serious results, and the cases of Whitaker Wright and another convicted prisoner at the Old Bailey, both of whom committed suicide, are of recent occurrence. These two prisoners took their own lives in order to avoid long terms of penal servitude, but suicides in police-cells are by no means uncommon and the inebriate or the person of ill-balanced mind charged with a minor offence is at least as likely to try to make away with himself as the malefactor who has deliberately committed a more serious breach of the law.

THE DISTRIBUTION OF PLAGUE.

As regards the Transvaal, Lord Milner, in a telegram to the Colonial Office received on May 23th, states that the plague return for the week ending on that date was as follows. Total number of fresh cases reported since May 21st, 5, all coloured persons. Of previous cases 5 have been found not to be plague, making the present total of suspected and proved cases 140—viz., 24 white and 116 coloured persons. The total number of deaths reported since May 21st is 3, all coloured persons. As regards Hong-Kong, a telegram from the Acting Governor received at the Colonial Office on May 31st states that for the week ending May 28th there were 27 cases of plague and 27 deaths from the disease. A telegram from the Acting Governor of the Mauritius received at the Colonial Office on May 27th says that for the week ending on that date there were three deaths from plague.

PRIMARY CEREBRAL ACTINOMYCOSIS DIAGNOSED BY LUMBAR PUNCTURE.

AT the meeting of the Société Médicale des Hôpitaux of Paris on May 13th M. Enriquez and M. Sicard described the following case of actinomycosis which is remarkable not only on account of the rarity of the disease in the brain but also because of the establishment of the diagnosis by lumbar puncture. A groom, aged 43 years, was admitted to hospital in July, 1898, with all the signs of cerebral tumour in the cortex of the left hemisphere. There were attacks of Jacksonian epilepsy, headache, visual troubles, and vertigo. Although he denied having had syphilis mercury and iodide were given energetically but without result. The symptoms increased in severity, walking became more and more difficult, and double optic neuritis developed. Trephining without incision of the dura mater was performed. As in almost all their cases of cerebral tumour M. Enriquez and M. Sicard found that the operation produced amelioration of the symptoms—vertigo, headache, and nausea, and above all of the stasis of the optic discs. But three weeks later the patient relapsed and lumbar puncture was tentatively performed in order to diminish the hydrocephalic tension. Cloudy fluid was obtained. At this time cytological examination of fluids was unknown. Microscopic examination of the deposit obtained after allowing the fluid to stand revealed actinomycetes. The patient was in the habit of chewing straw, but neither in the mouth nor elsewhere could the portal of entry of the fungus be discovered. A meningocele formed in the cranial wound and at its summit suppuration took place. In the pus characteristic granules with central mycelium and peripheral club-shaped bodies formed. Increasing doses of iodide of potassium were given but the patient died at the end of a fortnight from diffuse staphylococcic meningitis. The duration of the disease was less than eight months. In the fluid obtained by a second lumbar puncture two days before death the fungus was not found but only staphylococci. The necropsy showed general cerebro-spinal meningitis. In the left fronto-parietal region of the brain was a soft tumour, purulent at the

periphery. It communicated by a narrow opening with the left lateral ventricle. Neither in the tumour nor in the pus could actinomycetes be found, only staphylococci. The other viscera were normal. The absence of actinomycetes from the tissues examined after death is easily explained. M. Poncet has shown that after secondary infection with pyogenic microbes the fungus disappears from the affected parts. M. Enriquez and M. Sicard could find on record only one other case of primary cerebral tumour due to actinomycetes. In it the actinomycosis was recognised only at the necropsy. The tumour was situated in the position of the third ventricle. The portal of entry was in this case also impossible to find. The patient died comatose without secondary infection about a year after the onset of symptoms. On the other hand, secondary cerebral actinomycosis is well recognised. Out of 19 cases referred to in the classical treatise of Poncet and Bérard cranio-cerebral actinomycosis was due to extension from a cervico-facial lesion in eight and due to metastasis, almost always from pleuro-pulmonary lesions, in 11. This case again shows the value of lumbar puncture in diagnosis—a subject to which we have referred recently. The setting free of the fungus in the cerebro-spinal fluid was probably due to penetration into the dilated lateral ventricle from the tumour. M. Poncet finds that actinomycosis of the nervous system is invariably fatal. The largest doses of iodide are powerless to arrest the disease and the patients do not live beyond some months.

THE FIFTEENTH INTERNATIONAL CONGRESS OF MEDICINE.

A MEETING of the National Committee for Great Britain and Ireland was recently held, Dr. F. W. Pavy being in the chair, and Sir William S. Church, Sir Dyce Duckworth, Mr. Reginald Harrison, and others being present. It was resolved, in view of the confusion and disorder attending the last assemblage of the Congress—attributable, it is considered, to the deviation from former procedure in admitting as members of the Congress others than medical and scientific men—that the attention of those intrusted with the organisation of the forthcoming Congress at Lisbon should be called to the matter. This resolution was forwarded to the President and Secretary-General of the fifteenth Congress which will meet at Lisbon in April, 1906, and the rules just issued show that the qualifications of members are as strictly limited as they were at Paris in 1900. The recommendations of the subcommittee as to the future constitution of the National Committee were approved and it was decided that the committee should consist of a president and two secretaries who should invite the coöperation of (1) His Majesty's chief medical advisers in the Navy, the Army, the Indian Army, and the Lunacy and the Local Government Boards; (2) the Presidents for the time being of each medical corporation in the United Kingdom; (3) the President of the General Medical Council; (4) a professor of the faculty of medicine from each University; (5) the President for the time being of the Royal Medical and Chirurgical Society of London, of the Royal Academy of Medicine in Ireland, and of the Medico-Chirurgical Society of Edinburgh; (6) the President for the time being of the Incorporated Society of Medical Officers of Health; (7) a representative of the National Medical Press Association; (8) eight persons practising medicine and surgery in England (including Wales), four general practitioners from Scotland, and four general practitioners from Ireland; and (9) such other persons as it may be found desirable from time to time to invite to the National Committee. Dr. Pavy was asked to continue in the office of President and Mr. D'Arcy Power as secretary. Dr. Horton-Smith regretted that he was unable to continue to act as secretary. Dr. Clive Riviere was nominated to act in his place and a cordial vote of thanks was tendered to Dr. Horton-Smith for the valuable services he had rendered to the National Committee during his tenure of office. It was proposed by Dr. J. F. Sutherland that, in order to allay the feelings of irritation and disappointment rankling in the minds of those who attended the Madrid Congress, and to reassure these and others who may contemplate attending the Lisbon Congress, the honorary secretaries should be instructed to send a note to THE LANCET and the *British Medical Journal* to the effect that the British National Committee intends to supervise the comfort and convenience of congressists. The committee hopes to prevent or to reduce to a minimum at the Lisbon meeting the annoyance, discomfort, and disappointment experienced in Madrid in regard to travelling facilities, lodging accommodation, and so on, and to attain this end it is desirable to have a local British committee to keep in touch with the executive of the Lisbon committee. The proceedings terminated with a vote of thanks to the Medical Society for its kindness in putting the society's rooms at the disposal of the British National Committee.

THE INFANT ORPHAN ASYLUM AT WANSTEAD.

IN another column of our present issue we publish [illegible] important letters relative to precautions against the [illegible] rence of infection among the children in the Orphan Asylum at Wanstead. We think [illegible] friends of that long-established institution [illegible] that the committee has adopted a course so [illegible] with the expressed opinions of the medical staf[illegible] of the universal liability of young children [illegible] fever, measles, and whooping-cough and the [illegible] has often been worked by outbreaks of con[illegible] disease among children in Poor-law institu[illegible] effort should be spared in the early detec[illegible] isolation of such cases. A number of schools, both [illegible] and private, recognise this fact and make provision ac[illegible] ingly but the committee of the Orphan Asylum, where ma[illegible] of the children are of tender years, not only declines to provide an isolation building but has dismissed the staff of trained nurses.

THE FORD-PALLISER DRINKING TANK.

UNDER the heading of "The Services" in THE LANCET of May 21st p. 1458, we briefly referred to some inventions of medical interest which were shown at Bisley on May 17th, one of them being a water cart with appliances for rapidly boiling water in large quantities, thus minimising the risks of infection with enteric fever. The essential feature of this water-cart, which has been called by its designers the Ford-Palliser (Anti-enteric) drinking tank, is a tubular boiler-tank heated by ordinary paraffin oil. In this apparatus 50 gallons of water can be boiled in an hour while the cart is in motion, the tank being kept level by means of a gimballed arrangement. A second tank with interior cells containing a solution of saltpetre is connected with the boiler and is used for cooling purposes. Water which has been exposed to any kind of microbic or organic contamination is well known to be improved immensely for drinking purposes by mere boiling. If therefore it is found practicable under the conditions of a campaign to boil water rapidly whilst the cart is in motion and to distribute this water by the ordinary water carts to the troops in the field, a great advance will almost certainly have been made in protecting the men from enteric fever. Among those who witnessed the exhibition at Bisley were Lieutenant-Colonel A. M. Davies, from the Army Medical Headquarters staff, Major T. C. McCulloch, R.A.M.C., Colonel Robinson, officer commanding the Royal Army Medical Corps Depôt, Aldershot, Lieutenant-Colonel